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ABSTRACT

A computer assisted instructional program was developed for teaching data processing technicians at Naval Recruiting Command in New York, New Jersey, and Connecticut to create database records using CONDOR Database Management System Software. The procedure used in developing the program was based upon the Dick and Carey model of instructional systems development. The first of seven chapters in this report provides an introduction to the project (including background, a statement of the problem, a description of the project's purpose, and an overview of methods and procedures used). The next five chapters describe activities at each stage of the development process: analysis, design, development, implementation, and evaluation. (Field test data are presented in the chapter on evaluation using tables and figures.) The final chapter includes a summary and recommendations. The 15 appendixes, which constitute more than half of the report, include the job and instructional task analyses, pre- and posttests, the lesson and screen sequence flowcharts, the instructional materials, and the questionnaire used for formative evaluation. (23 references) (GL)

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CONDOR DATA BASE TUTORIAL TRAINING FOR DATA PROCESSING TECHNICIANS AT NAVAL RECRUITING COMMAND

by

John Cosby

A Thesis/Project

submitted to the Faculty of the

School Media and Arts

of the New York Institute of Technology in partial satisfaction of the requirements of the degree of

Master of Science

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CHAPTER 1

INTRODUCTION

Overview

In recent years, computers have received considerable attention for their ability to conduct self-paced instruction. The medium is well suited to individualized instruction, and its development as an instructional device was greatly influenced by advocates of programmed instruction. Additionally, there have been other factors contributing to the development of the computer instruction. The first factor has been the increasing advances in technology that has allowed computers to be utilized as an effective medium for specialized segments of curriculum. A range of instructional applications has been designed for specific curriculum areas, such as languages, social studies, mathematics, reading and science. Because of the success of these applications to conduct self-paced instruction, instructional applications have been developed to reach other areas: business, science, and health. A second factor for the educational use of computers has been the low-cost of computers, especially the personal computer, which has made them available to everyone. Consequently, a seemingly insatible demand for computers has created a growing need for good training at every level. To fulfill the demand, training has turned to computers to deliver instruction. As a delivery system, computers have been considered for their abilities to provide students with: modeling, drill and practice, tutorials, reference tools, simulated systems, tests, and complex calculations.

Statement of the Problem

The Naval Recruiting Command has purchased several hundred thousand dollars worth of Zenith 248 Personal Computers. Along with the purchase of the personal computers a data base software, CONDOR Data Base Management System, designed by Zenith Data Systems Corporation is included in the contract.

The Naval Recruiting Commands located within the Tri-State, namely, New York, New Jersey, and Connecticut have a number of recruiters assigned to them. They wish to create a data base using CONDOR Data Base Management System Software that will help to keep track of certain recruiter's information which needs to be both kept current and accessed as easily as possible. The information to be stored in the data base includes the recruiter's attainments, male and female, upper and lower mental groups, and others. Further, these reports will show daily, weekly, and monthly activities of each recruiter's production and the sum total of the recruiting command.

But before implementation of CONDOR Data Base Management System Software, training is needed for the Data Processing Technicians in setting up a data base. Data Processing Technicians within the recruiting commands are currently the primary operators of the Zenith 248 Personal Computers. They will also be responsible for building and maintaining the data bases. In order to train the Data Processing Technicians, a tutorial program has been designed and developed, namely, CONDOR Data Base Tutorial. The tutorial program will have them learn how to create a data base by building the format, definition and data files for the data base. This will enable them to create specific fields for the data base so that appropriate data information can be entered and stored.

The design and development of the computer-assisted-instruction for this thesis/project was done with the McGraw-Hill Interactive Authoring System. The Authoring System has enabled the designer to create a tutorial program. The tutorial program is a series of learning events which are linked together to form a lesson. These learning events are computer-based tutorials that present information and provide feedback. Feedback is in the form of fill-in-the-blank and application/simulation exercises which provide practice and reinforcement. Following the designers instructions, the learner's response branches him or her to another part of the lesson based on those responses.

The tutorial program for training, CONDOR Tutorial Data Base Software, is a set of instructions to enable the learner to create a data base. The contents of the tutorial program have been divided into four lessons: 1) Introduction, 2) Format, 3) Definition and Data, 4) Data Entry. Successful completion of all lessons will enable the learner to create a data base for his or her needs.

Purpose of the Project

The tutorial program for this thesis/project is designed as an instructional unit to train Data Processing Technicians to be able to create a single data base record by formulating the format, definition and data files. Then have learners enter data information into each record which will form a data base.

Definitions of Terms

The term or words that appeared in this thesis/project are the following:

Data Base - A set of data; part of the whole of another set of data, and consisting of at least one file, that is sufficient for a given purpose or for a given data processing system.

Data Base Management System (DBMS) - Can be characterized as a generalized software tool that provides a simple, flexible facility for accommodating different data files and operations.

Definition and Data Files - Attributes of a field, such as, field type, length in bytes, minimum and maximum values. Field types are of alphabetic characters stored in the defined space for a field.

Field - A fixed amount of space within a record allocated to store data. Fields are composed of field names and field values.

Format - The arrangement or layout of data.

Record - A collection of related data or words treated as a unit.

Assumptions

1. That Data Processing Technicians have attended Veteran Education Training Recruiting Orientation School (VETRO), for the purpose of understanding policies and procedures of recruiting.

2. That to have entered the United States Navy as a Data Processing Technician, he or she had to have passed the computer aptitude section of the Armed Services Vocational Aptitude Test. Tests area of concentration for Data Processing Technician are focused on verbal comprehension and math reasoning, both of which are important elements to completing CONDOR Data Base Tutorial.

3. That the implementation of training, if evaluated successfully, may result in expanding the use of the tutorial to other recruiting commands on a national level.

Limitations

1. That the program is designed for data processing technicians of Naval Recruiting Commands within the tri-state area, namely, New York, New Jersey, and Connecticut. CONDOR Data Base Management System software is used exclusively by the military environment and therefore, there is no intention to implement the program for private corporations, such as, IBM, Xerox, Mobil, and so forth.

2. That the McGraw Hill Authoring System Disk is not able to boot up on a hard disk. The basic components needed to produce this program included McGraw-Hill Interactive Authoring System Disk and a Delivery System Disk. These components could be used with any personal computer with characteristics of two (2) floppy disk drives, minimum of 256K of memory, and a color monitor. Types of computers used in the classroom at New York Institute of Technology were the Tandy Personal Computer, IBM PC, and Apple 2E PC. This limited many students, including the designer, who have personal computers with hard disk at their workstations, from creating their program disk outside the classroom.

3. That the McGraw Hill Authoring System Disk did not support simultaneous color display of screens for monochrome and color monitors. This was evidenced by the designer having access to a Zenith 161, two (2) floppy disks, monochrome personal computer. Colors displayed on the Zenith 161 were illustrated by amber and darkness. Consequently, choosing foreground and background colors for each screen (even with the color chart at hand) is not possible.

Method and Procedures

The method used in developing the training program was based on the Systematic Design of Instruction model described by Dick and Carey (1985).

Dick and Carey's systematic approach is described by incorporating it into steps and procedures. However, the steps and procedures are grouped into five phases: analysis, design, development, implementation, and evaluation.

Analysis

The designer determined first that a training need existed. The goal was established by identifying the instructional need. Subsequently, plans for developing the training were formed. This was accomplished by researching existing programs, materials, and professional literature to develop the training program. After the research review, a list of tasks was developed. The task list helped to determine the logical sequence and how they interrelated with each other to meet the instructional goal.

Design

The next phase of the systematic approach included the design of the learning objectives. The learning objectives were incorporated to determine whether the learner's performance did indeed meet the instructional goal. The design format of each learning objective included three characteristics as described by Mager (1984):

1. Performance - what learner is expected to be able to do.
2. Condition - the important conditions under which the performance is to occur.
3. Criterion - whether the learner's performance is acceptable.

In addition, the design phase also focused on entry behavior, instructional material, tests, evaluation, and planned learning activities which are necessary to determine the sequence and structure of the training.

Development

The first step was the development of learning events and activities. The learning events are based on Gagne's (1977) nine events of instruction.

The method of instruction used was Tutorial Computer-Assisted-Instruction (CAI), which used branching. The learner was presented with an instructional sequence consisting of text presentation, questions, and feedback. The designer selected the instructional media as described by Anderson (1985) and produced the instructional materials.

Implementation

The designer implemented materials according to the planned learning activities. Instructional materials were individualized to allow learners to progress at their own pace. Each learner was administered the same materials to provide a true measurement of the instructional effectiveness. Implementation of materials was also devised to gather data to improve the instruction.

Evaluation

Two types of evaluation were conducted to improve the instruction. The first type, the formative evaluation consisted of a series of evaluations, conducted to collect data which was used to identify how to improve the instruction. The second type of evaluation, the summative evaluation, was conducted after instruction to revise it to meet the standards of the designer.

Summary

Data Processing Technicians need to learn CONDOR Data Base Management System Software, so that they will be able to create data bases for their respective recruiting commands. To help them to learn, the designer developed a computer-assisted-instruction module. The method used to develop the computer-assisted-instruction was the systematic design of instruction. Learning objectives were designed and developed to determine whether the learner's performance did meet the instructional goal. The instructional materials were implemented and evaluated to determine whether the instruction needed revisions to improve the instruction.

CHAPTER 2

ANALYSIS

Introduction

The instructional system design (ISD) begins with the analysis phase, the most critical phase of the ISD, because its here that the preparation of designing and developing of the instructional program starts. Regardless of how well the following phases have been designed and developed, if the analysis is not performed judiciously, it will not produce training at an acceptable level. The analysis phase for this project has been divided into the following components: needs analysis, definition of the instructional program, analyzing existing courses and literature, and the plan for design and development effort.

Needs Analysis

The instructional design process began with the identification of a need. The need was the Naval Recruiting Commands wanting to create a separate recruiting data base for each command. In establishing the need, it was determined learners had no knowledge of a data base. To provide knowledge of a data base, formal training was established. To meet the need, training enables each learner to be able to demonstrate the ability to create data base record(s) by utilizing CONDOR.

Job task analysis

After the identification of the need, the first step was to analyze job tasks. The designer proceeded by establishing a list of tasks that made up

the job, with descriptions of the conditions under which the tasks were to be performed, and the standard indicating how well these tasks are to be performed. This illustration of the job task is shown in Appendix A.

Target Population Analysis

Individuals targeted entered the Naval Reserves as Data Processing Technicians. To become eligible they had to have passed a computer aptitude test. Test areas of concentration were verbal comprehension and math reasoning. If qualification standards were met, the target population attended a Naval Technical School for training in Computer Terminology and Technology. Provided they completed the school, they were assigned to the position of Data Processing Technician.

For this project, Data Processing Technicians were currently on active duty with the United States Naval Reserves. They had at least two years left on their present enlistment contract. Additionally, Data Processing Technicians were recruited from the Tri-State area, namely New York, New Jersey, and Connecticut. Within these areas they must have been assigned to a Naval Recruiting Command. Further, Data Processing Technicians must have had attended Veteran Education Training Recruiting Orientation School (VETRO), for the purpose of understanding the procedures of recruiting.

The Data Processing Technician chosen for this thesis/project exhibited the following characteristics. They were predominately male, white, in their twenties, and high school graduates. Their scores were above the 90 percentile on the entry level ASVAB test in comparison with other personnel entering the Navy. In their work experience, they have operated mainframes and begun COBOL programming.

All of the Data Processing Technicians chosen stated that they were interested in learning CONDOR Data Base to further their career. When asked

to indicate what they expect to "get" out of training, they expressed it in many ways, such as, "to learn as much about CONDOR Data Base Management System," "to learn how to run a data base," "to learn how to apply a data base for specific tasks at their command."

Organizational Constraints

The Naval Recruiting Command, responsible for the development of the instruction for training, assigned the task to the designer alone. This left the designer to use the ISD approach and apply the five components of the model: analyze, design, development, implementation and evaluation. This expanded the task of the designer to gather resources and perform long hours in developing the instruction for training. In contrast to the lone designer, the instructional designer often works with a team of specialists to develop the instruction (the designer had to fill all roles). This meant the designer had to play the role of several specialists to produce the training project.

Definition of the Instructional Program

Instructional Goal

Learners will be able to create a data base record on the Zenith 248PC by developing the format, definition, and data files that each learner must demonstrate in building record(s) necessary to form a data base.

Type of Learning Outcome

One of the first steps in designing the present computer-assisted instruction module was to categorize the type of learning outcomes. This was done by examining the objective of a lesson, and identifying what type of performance was expected of the learner after he or she has learned.

The learning outcome for the instructional goal of this project can be classified an intellectual skill according to Gagne (1979). Gagne describes four types of intellectual skills: discrimination, concepts, rules, and problem solving. The intellectual skills for this project require the learners to perform by differentiating the concept of the format, definition, and data files. The learners must apply the rule of creating each file separately in order to create a data base record.

In designing instruction, the existing computer-assisted instruction module followed the procedure of traditional computer-based instruction of the branching type (Eisle, 1978; Lower 1980; Rudnick, 1979). The learner views some information and is then asked a question. The learner responds; feedback is given to the learner's response. If the response is incorrect, the learner is told why and given another opportunity to respond to the same question.

The computer-assisted instructional module introduce a series of lessons that guide the learner through using CONDOR Data Base Tutorial Software. The tutorial program is comprised of four lessons: introduction, format, definition and data, and data entry. The program helps meet the instructional goal by having the learner run the tutorial at his own pace. This enables the learner to demonstrate an understanding of the data base by formulating a program that identifies the steps necessary to develop a data base.

Using the procedure outlined by Anderson (1983), it was determined the personal computer was the medium best suited for this instruction. As a delivery system, the personal computer was considered for its ability to provide learners with the computer-assisted instruction module. The CAI module was individualized and to be used at the learner's own pace. But most importantly, it provided each learner the actual experience of creating a data base with a personal computer.

The design and development of the existing CAI can be viewed according to Chang (1982) who states:

> "Computer-assisted instruction theoretically holds substantial promise for the field of adult continuing education. Much of what is known about the learning characteristics of the adult learner indicates that CAI should be an extremely useful tool in their instruction. Their needs for systematic presentation, of increments of curriculum materials, for immediate feedback and positive reinforcements for repetition and for individualized program of study make CAI a particularly suitable thinking device for adult education" (P. 166).

Related theory

In designing instruction, the existing computer-assisted module follows the procedure of traditional computer-based instruction of the branching type (Eisle, 1978; Lower, 1980; Rudnick, 1979). This was described in this chapter in the section Type of Learning Outcome.

Literature Review

The survey of existing courses was based on the research at NYIT and Mid-Manhatten Library. The designer also used the NYIT Library Service called TECHSEARCH. It is a computer-based bibliographic information system which makes the library resources available to students.

The designer conducted a survey of existing sources which related to data bases. After gathering information and listing of existing courses and materials, the designer reviewed the contents and provided a brief abstract of each.

Survey of Existing Courses and Materials

Resulting from the computer search, those five books are the following:

1. Computer Data Management and Data Base Technology (Harry Katzan, Jr., 1980)

The contents of this book deal with the immediate access to integrated information from a system. Katzan presents topics in such areas as formatted records (to achieve operational efficiency) and file nomenclature (assigned to programs symbolically). Topics also include one on data that is independent of the manner in which it is stored and of the files that use it.

2. The ABC's of DBASE III (Robert Cowart, 1986)

This book is used by the beginning and intermediate student. Cowart explains how the data base is comprised of a list of information and he examines the form into which it is put. The source provides a basic understanding of data base structure, e.g., deciding how many fields the data base will have, and determining what kind of information each field will hold. Both the data and data base structure are stored in a data base file. This source is adaptable to self-study.

3. Data Processing Technician 1 & C (Naval Education and Training Program Development Center, 1981)

This textbook provides information to the Navy personnel whose duties require a basic knowledge of the fundamental concepts of organizing the data base of an organization.

4. Programming with R: Base System V (Cary N. Praque, James E. Hammitt and Allan P. Thompson, 1987)

The contents of this book deal with a relational data base management system. The topic includes joined information from two or more databases based on a shared field and the concept of a common key. The work explains the database structure as being made up of several elements; data base name, the name of each field, the maximum size of each field, and the field type.

5. DBASE II (Kerman D. Bharuche, 1985)

This book is a comprehensive user's manual introducing students to creating a data base. It explains the creation process and to the structuring of the data you wish to create. In a self study format, it provides a series of steps to creating the data base by designing the field, record, and file.

Plan for Design and Development Effort

Project plan

The designer used the Program Evaluation Review Technique (PERT) and Gantt charts to determine the specific activities and events that made up the instructional program in this project. In developing the PERT, the designer arranged a list of activities for planning the entire project and estimating the project completion date. A list of activities is shown in the table 1 below.

Table 1

ACTIVITY LIST FOR CONDOR TUTORIAL PROJECT

ACTIVITY	DESCRIPTION	IMMEDIATE PREDECESSORS
A	Instructional Goal Analysis	-
B	Perform Audience Analysis	A
C	Prepare Instructional Objectives	B
D	Design Learning Strategy	C
E	Prepare Design Document	D
F	Write Scripts	E
G	Formative Evaluation (using scripts)	F
H	Program Lesson(s)	G
I	Formative Evaluation (using CAI)	H
J	Revisions	I
K	Summative Evaluation	J

Table 1 contains the column labeled immediate predecessor. In order to develop the PERT network, the designer showed relationship among the

activities. One way to determine these relationships was to show immediate predecessor for each activity, where the immediate predecessors are all the activities that must immediately precede the given activity.

Once the designer established the PERT network, additional information was needed on the time required to complete each activity. These time elements were used in the calculation of the duration of the entire project and the scheduling of the specific activities. The PERT network, Gantt chart and activity time elements are illustrated in Appendix B.

Budget

A training budget plan has been designed to provide fifteen Data Processing Technicians assigned to Naval Recruiting Command with training and development activities equivalent to a minimum of two working days. These activities offered opportunities for each individual to build a knowledge base and to develop skills necessary for successful performance. A proposed training budget plan indicating each budget item and cost is illustrated in Table 2. Budget items were grouped into three categories, namely materials, expenses, and labor. Listed below is a brief description pertaining to those budget items within each category.

Materials

Fifteen Zenith 248 Personal Computers along with fifteen CONDOR Data Base Management System Software were used for the training. For field training, markers, tape, looseleaf paper for programs, binders and folders were purchased for each participant in the training program. Additional supplies, tools, and equipment were purchased.

Expenses

The Field training program entailed training workshops for all Data Processing Technicians. Included under expenses are all meeting costs: room

rentals, breakfast, lunch, dinner and coffee breaks. Automobile expenses were incurred for four rental cars to transport learners and designer to and from training. Professional/Training development refers to the designer's membership in the American Society of Training and Development and subscriptions to a number of relevant training magazines and journals.

Labor

Labor essentially consisted of designer and trainee's labor cost in the development of CONDOR Data Base Tutorial Software. As illustrated by Table 2, the designer's labor is broken down into the five phases of the instructional process.

Table 2

TRAINING BUDGET

BUDGET ITEM	AMOUNT
Materials	
Hardware Equipment at $300 each	4,500
Software at $350 each	7,000
Office Materials	500
Training Materials	2,000
Total Materials	$14,000
Expenses	
Field Training Program	8,000
Professional/Training Development	1,500
Automobile Expenses at $250 each	1,000
Total Expenses	$10,500
Labor (Designer)	
Analysis (200 hrs/25 hrly rate)	2,500
Design (100 hrs/25 hrly rate)	5,000
Development (140 hrs/25 hrly rate)	3,500
Implementation (120 hrs/25 hrly rate)	3,000
Evaluation (280 hrs/25 hrly rate)	7,000
Trainees Wages at $300 each	4,500
Total Labor	$25,500
Grand Total	$50,000

Summary

The Instructional System Design (ISD) began with the analysis phase, the most critical phase of the entire ISD. The designer began the process by identifying the need for training. This enabled the designer to identify the instructional goal which was for learners to create a data base by utilizing CONDOR. The learning outcome for the instructional program was classified as an intellectual skill. The intellectual skill used by the learners was to differentiate the concept of the format, definition, and data files. Learners then applied the rule of creating each file separately in order to create a data base record for the learning activity.

The designer projected a plan for the design and development of the instruction by using the Programmed Evaluation Review Technique (PERT). PERT and Gantt charts were used to determine specific activities and events that made up the instructional program. Once the PERT network was established, it specified calculation of the duration of the entire project and the scheduling of specific activities. The last step of the analysis phase included a training budget of the budget items and cost.

CHAPTER 3

DESIGN

Introduction

The design phase began with the instructional task analysis. These instructional task measurements were converted into the development of the learning objectives. These steps provided the identification of the knowledge and skills required for the learner to achieve the instructional goal. The learning objectives were then grouped and sequenced by learning activities to optimize success, e.g., that the learner reach the instructional goal. Also in the design phase, the designer specified entry behaviors and prepared an assessment and evaluation system to determine the effectiveness of the instruction.

Instructional Task Analysis

After the instructional goal was established, the instructional task analysis was applied to identify subordinate skills required for the learner to achieve the instructional goal. The simplest subordinate skills, not important in and of themselves as a learning outcome, must be achieved before the next higher subordinate skills are attempted. In turn, these subordinate skills must be successfully completed until the top of the hierarchy or instructional goal is reached.

Two fundamental steps were included in the development of the instructional task analysis. The first step was to classify the goal according to the domain of learning (as described in analysis phase of chapter 2). The domain of learning for this project was essentially intellectual. To a lesser degree, the psychomotor domain is emphasized in these skills related

to using the keyboard of the computer. In the second step, the major areas of learning were identified and sequenced to describe exactly what the learners would be doing when they performed the tasks for the instructional goal. For this project, the major areas of learning were divided into four steps. Each step was further divided, all of which were necessary to achieve the instructional goal. These divisions and subdivisions are illustrated in Appendix C.

Instructional Objectives

The instructional objectives were derived from the instructional goal and task analysis objectives. The instructional objectives were designed to describe exactly what the learner would be able to do when he/she completed the instruction.

The terms instructional objective and terminal learning objective may be used synonymously when describing learner's performance. According to Mager (1984), the format includes three characteristics that help make an objective communicate an intent. These characteristics answer three questions: (1) What should the learner be able to do? (2) Under what conditions do you want the learner to be able to do it? (3) How well must it be done? These questions reflect the characteristics of performance, conditions, and criterion described in chapter 1.

Thus, the Mager model was used to develop the instructional objective for the instruction in this project. It is stated below:

1. Given a Zenith 248 Personal Computer and CONDOR Data Base Management System Software, the learner will be able to build data base record(s) containing the following fields: recruiter's name, social security number, recruiting command, rate, and start date. Be able to create the data base record in 45 minutes with level of competency at 100%.

A. Begin to create the data base by assigning the name Recruiter, which must be eight or less characters.

B. Create the format file for the Recruiter data base by assigning the field names and number of characters for each field. The field names must consist of the following: name, social security number, command, rate and start date.

C. Create the definition and data file for the Recruiter data base by entering the field type codes; alphanumeric, numeric and julian date to the appropriate fields.

D. Enter data into the Recruiter data base by applying the appropriate information into each field. Verify, correct errors and then save the data base Recruiter.

Entry Behaviors Defined

The procedure used to identify entry behaviors was directly related to the instructional analysis process. The technique used to identify the entry behaviors was to ask the question, "what does the learner need to know in order to learn the skill?" (Dick and Carey, 1985, P.81). The answer to this question helped identify common skills necessary for the learners to have before undertaking the instruction. A list of entry behaviors for this project include the following:

1. Set up and operate MS-DOS/micro-computers
2. Construct flowcharts
3. Program in BASIC language

Group and Sequence Objectives

To achieve the instructional objective, the learning activities derived from the task analysis were grouped and sequenced for instruction. They are listed below:

1. Able to create a data base named recruiter.
2. Able to create the format file for data base.
3. Type command FORMAT RECRUITER to begin formating fields.
   a. Describe and type (NAME): and (COMMAND): followed by twenty underscores to allow for appropriate information.
   b. Describe and type (S.S.#): and (RATE): followed by eleven and two underscores respectively to allow for appropriate information.
   c. Describe and type (START DATE): followed by eight underscores, in order to format MM/DD/YY.
4. Create the definition and data files of the data base.
5. Identify the following field type code: alphanumeric, numeric, and julian date.
   a. Able to enter appropriate field type code to field.
6. Able to enter data into data base called Recruiter.
   a. Enter appropriate information into the corresponding five fields.
7. Correct any errors found by pressing the appropriate arrow keys and then retyping information.
8. Save data base called Recruiter.
   a. Use CTRL and E keys simultaneously to save data base.

Learning Activities Specification

Each learning objective was related to one or more learning activity. The content of each activity describes tasks the learner must perform during the instruction. Table 3 below illustrates the contents of the learning activities:

Table 3

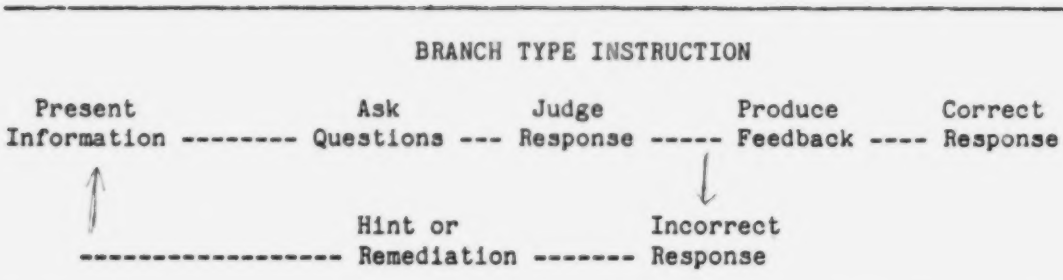
Learning Activities

Introduction 1	Format 2	Data & Definition 3	Data Entry 4
Data Base Named Recruiter 1.1	Format (Start/Date:) MM/DD/YY 2.4	Identify Alphanumeric Numeric Julian Date 3.3	Save Data Base Recruiter 4.4
	Format (SS#): + (Rate): 2.3	Field Type Codes 3.2	Correct Errors 4.3
	Format (Name): + (Command): 2.2	Create Data and Definition File 3.1	Enter Appropriate Information 4.2
	Create Format File 2.1		Display Data Entry Screen 4.1

Instructional Method

The method of instruction used was computer-based instruction of the branching type as described by Eisele (1978), Lower (1980), and Rudnick (1979). The branch type approach to the content of the instruction is illustrated below in Figure 1.

Figure 1



As indicated by the illustration, the branch type programs provide several pathways through the same materials depending on the learner's response.

Media Selection

The designer selected a personal computer for the delivery of the programmed instruction because it could be installed where needed. The personal computer provided individualized instruction at the learner's own pace. But most importantly, it enabled the learner the actual experience of creating a data base on a Zenith 248 PC, which is what the learner would do at their worksite after completion of the training program.

Assessment System Specification

The assessment system used by the designer for the project included the pretest, embedded test, and post test. The tests were designed to (1) test and evaluate student's progress, (2) and to provide information about the effectiveness of the instruction. The results of the tests indicated to the designer exactly how well the objectives of the test were met or whether revisions were needed.

Pretest

The pretest was used to measure skills that were going to be taught in the instruction. The primary purpose of the pretest was to provide a basis for measuring after the completion of the instruction. The pretest consisted of items to measure predesigned objectives of the instruction. The items were fill-in-the-blank questions. The pretest is included in Appendix D.

Embedded Test

The embedded test was used to measure knowledge gained during the instructional material. The embedded test items were designed as practice items with immediate feedback. The items required the learner to recall the information preceding the practice items, or have the learner branched to look again at the preceding information to answer the test item correctly. Further, the embedded test was designed to have the learner complete all of the items of the instructional materials successfully. The instructional materials with embedded test is included in Appendix E.

Post Test

The post test was used to measure learners' mastery of skills taught by the instructional materials. The primary focus of the post test was on whether the learners successfully attained the instructional objectives. The post test is included in Appendix F.

Evaluation Systems Specification

The evaluation system designed consisted of two types of evaluation: formative evaluation and summative evaluation.

Formative Evaluation

The emphasis in formative evaluation was on the collection of data in order to revise the instructional materials to make the instruction as effective as possible. To arrange for the collection of data, the formative evaluation was divided into three basic phases: one-on-one, small group, and field trial evaluations (Dick and Carey, 1985). Only the first two were used in this project.

Summative Evaluation

The approach to the summative evaluation was based on the work of Don Kirkpatrick's Four Levels of Evaluation. Kirkpatrick's evaluation process made the evaluation goal clear and achievable by breaking it down into four logical steps. These steps are listed below:

Level 1: Reaction

Level 2: Learning

Level 3: Behavior

Level 4: Results

Summary

The design phase began with the development of the instructional task analysis. The first step was to classify the domain of learning as intellectual. The second step was to identify the major areas of learning. For this project, the major areas of learning were divided into four areas: Introduction, Format, Definition and Data, and Data Entry. Each area was further divided into subordinate skills which were necessary to achieve the instructional goal. Derived from the instructional goal and instructional task analysis were the instructional objectives. The instructional objectives

were designed to describe exactly what the learner would be able to do when the learner completed the instruction. Each instructional objective was related to one or more learning activity. Learning activities were identified by content, instructional method, and media. To measure each learner's performance, a pretest, embedded tests, and post test were designed and developed. Data from these tests, as well as other information, were evaluated to determine the effectiveness of the instruction. Two types of evaluation were conducted; formative and summative.

CHAPTER 4

DEVELOPMENT

Introduction

In the development phase, the instructional activities were developed based on the task performance, objectives, learning activities, asessment and the evaluation system as defined in the design phase. The designer conducted the development of the instructional materials by first developing one lesson, and then evaluating it based on the following factors: appropriate content, correct sequence, practice exercises, and adequate feedback. Based on the development of the lesson, all the remaining lessons were sequentially developed. Additionally, materials for evaluation were produced to determine whether the instruction was effective or revisions were needed.

Learning Activity Development Scheme

The program for this project is a CAI module. Table 4 presents guidelines designed for the CAI program based upon the nine events of instruction described by Gagne (1977). In table 4, the nine events are sequentially listed in the first column. The second column describes procedures the designer followed in developing each lesson within the instructional materials.

The designer developed four lessons for the CONDOR Data Base Tutorial: Introduction, Format, Definition and Data File, and Data Entry. It is illustrated by the Conceptual Design Form in Appendix G. Additionally, the lessons have been documented with the Lesson Flowchart and the Screen Sequence Flowchart illustrated by Appendix H and I, respectively.

Table 4

Events for CAI Module

Event of Instruction	Procedure
1. Gaining Attention	Raise the learner's curiosity. Present a hypothetical situation.
2. Inform Learner of Lesson Objective	State what the learner is to accomplish once he or she has learned.
3. Stimulating Recall of Prior Learning	Have the learner recall the rules that are applicable.
4. Presenting Stimuli with Distinctive Features	The stimulus is information about an existing state of circumstances.
5. Guiding Learning and 6. Eliciting Performance	The computer is used to stimulate responses to action choices supplied by the learner.
7. Providing Informative Feedback	Feedback is provided by changing the stimulus situation in response to the learner's action.
8. Assessing Performance	Judge the performance of the learner in mastering all the data base tutorial information.
9. Enchancing Retention and Learning Transfer	Have the learner demonstrate knowledge, comprehension, and application of the data base information by creating simulation responses similiar to a real data base entry.

The introduction lesson was developed to present initial operating screen procedures, gain the learners attention by using a text display of variable colors and graphs, provide interaction between learner and program, and inform the learner of the objective of the instructional program.

Each lesson gained the learner's attention by presenting the objective of that lesson as texts scrolls up the screen and stay stationary until the learner responds to those screens with questions, in order to access the next screen. Recall of prior learning is stimulated with appropriate test and graphics. Feedback is provided to the learner in the form of positive written screen information. Concerning the inappropriateness of the answer, a screen restating information necessary to answer a practice question was created to guide the learner to the appropriate response. The performance of the learner in mastering all the data base tutorial information presented in the lessons of the course was assessed through fill-in-the-blank, application entries.

In developing the instructional program, levels of educational materials were designed that required the learner to demonstrate knowledge, comprehension, and application of the data base information presented. The following examples are illustrations of each instructional level presented in the program:

Example - Knowledge - primary objective of the introduction lesson is to identify the basic factors that make up a data base.

Example - Comprehension - understanding the step-by-step procedures in formulating the format file.

Example - Application - after creating a data base record format, incorporate the data entry lesson by creating simulation responses similiar to a real data base entry.

The sequence of the instruction presented incorporated the tutorial strategy which presents new information and provides for testing on the information. Testing can occur scattered throughout the context, after major sections or at the end of a lesson. The major events of the tutorial strategy are: (1) present information, (2) ask questions and present a problem, (3) judge responses and provide feedback, (4) next sequence.

Learning Activity Development

The initial time frame to design the activities of the program was scheduled to commence on February 9, 1987 and to conclude on June 1, 1987. However, unexpected delays occurred. The time frame extended well beyond its expected termination. An example was the "write script" activity which was to have been completed on or about April 7, 1987, but was not finished until May 3, 1987. This occurred for several reasons. (1) More hours were needed than originally anticipated, (2) additional revisions of content were needed, and (3) other strategy testing was incorporated. With the delay of several activities, the implementation and both types of evaluations, formative and summative, could not be incorporated during the plan period. The difference of time between the plan and actual time frame was. This is illustrated below in Table 5.

Table 5

DURATION IN WEEKS

	PLAN	ACTUAL
Analysis	3	3
Design	6	6
Development	5	9
Implementation	4	8
Evaluation	3	11

Another delay during the development of the learning activity was the gathering together of the participants for the training program. With the designer able to schedule the training program only on weekends, it required additional planning, regarding to the administration of the formative evaluation. The one-on-one stage of the formative evaluation provided no difficulty as the designer and learners were flexible in arranging a time and date for the individualized training. However, when the designer administered the small-group phase of the formative evaluation, difficulty was encountered in scheduling a time and date for the learners. Consequently, the administration of the small-group evaluation was delayed approximately seven weeks from its original time frame. In conjunction to the gathering of the learners, the designer had to ensure that the use of the training facility would not be in conflict with command activities during the planned time and date of the training program.

Learning Activity Review

The content of the instructional program was initially reviewed by the designer. The writing scriptboards were reviewed in sequential order (see

Appendix J for example). In developing the program disk, which contained the four lessons (introduction, format, definition and data file, and data entry), review of the content of each of the 77 screens was conducted to determine if it was appropriate to the objectives of that lesson and further whether it fitted into the overall learning scheme.

After the development of the instruction, the subject matter expert (SME) reviewed and provided areas of potential problems before learners became involved with the administering of the instruction. His reaction to the content of the module indicated whether segments of the materials needed revisions. Thus, the designer gathered recommendations from the SME to improve the instructional program's effectiveness.

Materials for Evaluation Produced

The designer produced six sets of materials for evaluation. The materials for evaluation were developed to determine the instruction's effectiveness based upon the learner's interaction with the instruction. The materials were used in the formative and summative evaluation process. Included in the materials for evaluation were the entry level questionnaire, pretest, embedded test, post test, and the evaluation checklist questionnaire (see Appendix K).

Summary

In the development phase, the designer conducted the development of the instructional materials by developing and evaluating each lesson. Materials for evaluation were produced to determine whether the instruction was effective or revisions were needed. For example, the writing scriptboards were reviewed in sequential order to determine if the content was appropriate

to the objectives of that lesson and further whether it fitted into the overall scheme. Review of the materials was done during and after completion of the instruction by both the designer and subject matter expert to verify the content was accurate. The program for this project is a computer-assisted instructional module. Guidelines used for the CAI module were based upon the nine events of instruction described by Gagne (1977). The instruction incorporated a tutorial strategy which presented new information and provided for testing on the information.

CHAPTER 5

IMPLEMENTATION

Introduction

This description of program implementation focuses solely on the activities, materials, and administrative arrangements that comprised the program. It does not include a description of the results of program activities as would a formative or summative evaluation. In preparing a detailed implementation report, the designer simply named each section according to the following headings listed in this chapter.

Materials Reproduced

The designer produced the evaluation materials once, except for the pretest and post test which were reproduced twice. Three sets of the CAI module were copied for the one-on-one phase of the formative evaluation process. Because of revisions to the instructional materials, the CAI module was reproduced twice during the one-to-one evaluation. After the one-on-one phase, the designer gathered data information to help revise the instructional materials. Subsequently, the CAI module was reproduced once more. Three copies of the CAI module were produced for the small-group phase of the formative evaluation process.

Instructional Delivery

The designer administered the CAI module and evaluation materials to samples from the target population in two phases. The two phases consisted of the one-on-one and small group phase of the formative evaluation process.

For the one-on-one phase, the designer administered the instruction on an individual basis with the learner able to progress at his own speed. Three individuals from the target population were chosen for the one-on-one phase. The designer began the instructional delivery by administering the entry level questionnaire (see Appendix L) to each learner separately. The purpose of the entry-level questionnaire was to determine whether each learner had the entry level skills necessary to participate in the training program. Each of the three learners proved to have the prerequisite skills. Next, the designer administered the pretest to determine whether the learner did or did not have prior knowledge of CONDOR Data Base. As expected, poor results from the pretest occurred. The designer then arranged for each learner to go through the CAI module separately. Each learner was encouraged to verbalize areas of difficulty encountered with the instructional materials. Each learner was informed that the designer would keep notes throughout the process. At the completion of the CAI module, the designer administered the post test to each learner. Finally, each learner was given a evaluation checklist questionnaire.

After completion of the CAI module and evaluation materials with the first learner, the designer gathered the learner's comments, notes, and test results to help in the revision of the materials, before it was administered to the second, and finally the third learner.

For the small group phase, the designer selected three participants from the target population. The procedure used in the small group phase was similiar to the one-on-one phase except for the following: (1) the three learners were administered the instruction together, (2) the designer did not

sit and verbalize with the learners during the instruction. The learners did not have any problems with the CAI module and evaluation material. Additionally, the learners successfully completed the post test with a score of 100 percent.

Data Collection

An important consideration during the implementation process was the collection of data. The designer gathered information for the purpose of determining the value or worth of the program. To help assess the effectiveness of the program, the types of data that were collected included the following:

- Test data were collected on entry behaviors, pretest, embedded test, and post test.
- Comments made by learners during the instruction about difficulties encountered at particular points in the materials.
- The time required for learners to complete various components of the instruction.

Summary

This phase consisted of the implementation of the CAI module and evaluation materials to the learners. From each learner's interaction with the materials, the designer gathered each learner's comments and test results to help in the revisions of the materials.

For the one-on-one phase, the program was administered on an individual basis with each learner going at his/her own pace. Each of the three learners was given the CAI module and evaluation materials separately. The designer

sat with each learner and gathered comments made by them. In addition to comments, tests were administered to gather data information. The tests included entry behaviors, pretest, instructional materials with embedded test, and the post test. Both learner's comments and test results helped in the revision of the materials.

For the small group phase, the procedures of administering the CAI module and evaluation materials were identical to the one-on-one phase, except the three learners sat together. Also, the designer gathered the learner's comments after the administration of the materials.

All of the learners completed the CAI module and evaluation materials.

CHAPTER 6

EVALUATION

Introduction

The major concept underlying this chapter was the formative/summative evaluation. The emphasis in formative evaluation was on the collection of data in order to revise the instructional materials so to improve the materials as effective as possible. At some point, a determination had to be made on effectiveness. In order to reach that decision, the designer conducted a summative evaluation. But because of the limitation within this study, such as, limited amount of time, reassignment of learner's who participated in the study, and availability of computer hardware to name a few, the summative evaluation was not fully implemented in this report. The summative evaluation was based on the work of Don Kirkpatrick's four levels of evaluation.

Formative Evaluation

The purpose of designing and conducting the formative evaluation was to collect data and information during the development of this instruction, so that the information could be used to make the instructional materials more effective.

The first draft of the instructional materials, especially the story board was reviewed with the subject matter expert (SME), who looked at the courseware and identified areas of potential problems before use with learner's. Areas of focus centered on (1) whether lessons should use Application/Simulation or Fill-in-Blank techniques, (2) designing the Format as either linear or branching, (3) wording of text for clarity and accuracy.

The information collected during the discussion with the SME emphasized the importance of re-examining the instructional materials, which have been incorporated into the final version of the story board and detail screens, illustrated in Appendix J and M, respectively.

In order to collect data from the learners during the formative evaluation process, two basic phases were incorporated: (1) the first phase was the one-on-one, (2) the second phase of the formative evaluation was the small-group evaluation. It should be mentioned here there normally is a third phase of the formative evaluation, the field trial, which was not included in this study. The reason being this study was not designed for groups of eight or more. A description of the two phases of the formative evaluation process are listed below.

One-on-One

During the first stage of formative evaluation, the one-on-one evaluation, its purpose was to identify and remove the most obvious errors in the instruction, and to obtain initial reactions to the content from the learners. This was accomplished through direct interaction between designer and individual learners. Activities were set up to obtain the above information which are discussed below:

The exact number of learners selected for the one-on-one evaluation was three. The learners were chosen as samples of the target population. The learners exhibited different levels of achievement primarily in programming experience. It ranged from having no programming experience to actual programming experience. It was anticipated that the learner with the programming background, as opposed to the learner without, might help the learner to learn the instruction faster. However, it was discovered the

instruction was appropriate for the three learners. After completion of the questionnaire and pretest, it was shown the three learners illustrated entry level behaviors necessary for the set of instruction.

At the beginning of the one-on-one, it was explained to the learner that a new set of instructional materials had been designed and that the designer would like his reaction to them. The designer encouraged the learners to relax and talk about the materials. When the learners used the materials, they found (1) typographical errors; (2) black lettering should have been used to offset the lighter background color; (3) changed the blinking word color from the other lettering to emphasize the presentation; (4) omissions of content; and (5) misunderstood content. From these suggestions for change, it had to be determined whether revisions would make the instruction more effective. Therefore, the more difficult revisions had to be evaluated. The strategy employed here was those areas that affected the learner's performance on the content of the materials and those that resulted in the most comments. Areas of difficulty encountered by the learners are listed below, and can be seen in its entirety by viewing the first version of the CAI module print-out in Appendix N.

Screen 3 - The learner responded with the appropriate answer, data base, however the designer created the CAI module to read Data Base with a space between the two words. This illustrated an example of a faulty material on the part of the designer.

Screen 9 - After review of this screen, the first learner noticed a misspelled word, forme, which should have been form.

Screen 25, 27, 28, 29 - The information provided by the screens were unclear to the learners. The learners did not know how to answer the information. All four screens were exactly similiar in that the learner had to respond the same way.

Screen 55 & 56 - The learners had difficulty in responding to the information on the screen. It was unclear as to what the learner was supposed to do. These two screens were identical in entering data onto the screens for the learner.

The one-on-one evaluation was accomplished through direct interaction between the designer and individual learner. The approach used was for the designer to read along with each learner to discuss what had been presented in the text. In order that this could be accomplished, rapport had to be established with each to interact effectively. Data information from the entry behavior questionnaire, pretest, instructional materials with embedded test, post test, and attitudinal questionnaire, were obtained from each learner. Learners were asked to review each item and then had them comment why they made the particular responses that they did.

As illustrated by Table 6, it contains the number of embedded test items and its summarily for each lesson. Table 6 is divided by the four lessons; introduction, format, definition and data, and data entry. As illustrated by Table 7, the number of attempt responses for each item is grouped by lessons rather than individually. The basic reason for this method is the computer-assisted instruction has a built-in response recording mechanism. This built-

in mechanism recorded individual correct/attempt responses by grouping them by each lesson rather than individually. Although items were grouped for each lesson, a summary of the data was received and measured to determine whether the instruction was effective.

Table 6

EMBEDDED TEST ITEMS

SUBJECT	INTRO	FORMAT	DEF & DATA	DATA ENTRY
1	3	15	6	6
2	3	15	6	6
3	3	15	6	6

Table 7

ATTEMPT RESPONSES

SUBJECT	INTRO	FORMAT	DEF & DATA	DATA ENTRY
1	5	20	6	5
2	4	19	5	6
3	3	18	5	5

Since the computer-assisted instruction module was tutorial in strategy, it includes a function to weight the response from the learner. If the response was appropriate or correct, it continued to the next screen. If the response was inappropriate or incorrect, the learner was routed to an earlier screen of information and again asked to answer the embedded test item. Table 6 and 7 indicated, for example, that learner #1 had five attempts for the three possible correct responses for the embedded test items in the introduction lesson. Learner #3 has three attempts for the three correct responses for the embedded test items. An explanation for the difference

between the learner's correct/attempt responses as indicated by Table 6 and 7 occurred possibly for two reasons: (1) Because of the different levels of achievement of the learners, some learned faster than others; (2) Some of the material was found to be faulty and revisions of the material was needed. The latter primarily was the approach taken by the designer when the instruction materials were administered. A technique used to evaluate the instructional was if the learner needed two or more responses to an embedded test. When this occurred, the learner was asked to comment on why they made the particular response they did. The material was then reviewed with the learner by the designer to determine if the instructional material was faulty. An example of faulty material is illustrated partly below with screen #3 (also seen in the print screen shown in Appendix N).

Screen 3

You will be creating a

_____

---

in which the appropriate or correct response to the above question was DATA BASE (capitalized or not). The learner had responded with an acceptable response, database, however because the answer accepted by the computer-assisted-instructional module was designed to read DATA BASE with a space between the two words, it displayed an incorrect message and consequently had the learner review earlier presentation information, although the learner correctly responded and knew the information. This was a perfect example of an error lying within the design of the instructional material rather than the

fault lying with the learner. The faulty material was fixed by redesigning the answer accepted by the computer-assisted instruction to read DATABASE, with or without a space between the two words.

Also, there occurred the situation of misunderstood content that resulted in an inappropriate response by the learner. An example is shown below:

Screen 27

Type in the following information

(Command): in the answer blank that's

before the 14 underline characters

which was revised to . . .

You are to type (Command):, with the

appropriate brackets and colon, at the positioning of the cursor

which is displayed after the information (SS#).:

The correction of the above content screen was helpful in another way. Following this particular content screen were four screens of similar information/answer type. The revisions of the content provided consistency throughout the five (5) sequences of screens, thus lessening chances of error by the learners.

A review of Table 6 & 7 indicated the initial response to the embedded test items were average to above average for each of the learners. As expected, the learner's performance was better with each learner. This happened because the instructional materials were revised after collecting the earlier learner's comments about the materials and the designer's own reaction to making the instruction more effective. Looking at Table 6 & 7, the display

of learner #3 of the one-to-one evaluation showed a slightly higher number of correct responses than learner #1. This was because the instructional materials had been revised when learner #3 was given the materials following comments gathered from learner #1 and #2. However, learner #2 and #3 were much closer because fewer revisions of the instructional materials were made. Therefore, it validated the notion that the instructional materials improvement was corrolated to better performance by each sequential learner.

Table 6 & 7 indicated the learners were able to complete the embedded test items of the lesson even though more than one response to an embedded item was required. This was appropriate for the computer-assisted-instructional module because of the tutorial strategy design with branching of responses; in which more than one response to an embedded test item was appropriate. In summary, a review of the learner's overall responses indicated the instructional materials were effective and efficient in providing the instruction.

One of the elements of interest during the one-on-one evaluation was the amount of time required by each learner to complete the entry behavior questionnaire, pretest, instructional material with embedded test, post test, and the attitudinal questionnaire. Because of the nature of the one-on-one in having the designer read along with each learner and reviewed their comments, consideration had to be given to the actual time of completing each item of a given task, and subtracting it from the review between the learner and the designer. Needless to say, this was a very difficult function to accomplish. In documenting the learner's time for this project, only the instructional material with embedded test time results was tabled. It will not be illustrated here but rather shown in the next section, the Small-Group

evaluation. The purpose for this was the designer wished to illustrate a comparison of the one-on-one learner's time to those of the small-group.

After the three learners completed the instruction, an overall evaluation was made regarding the learner's comments, performances, revisions to the instructional materials, and the designer's own reaction. At that point it was felt the instruction was efficient and effective in meeting the objectives of the program, only then did the project proceed to the second phase of the formative evaluation, the small-group evaluations.

Small-group evaluation

The designer administered the instructional materials to three learners with all the required equipment and materials present. The setting consisted of a quiet, medium size room with three Zenith 248 personal computers. The Zenith 248 personal computers were installed in a laboratory walled desk setting, so that the learners could not see one another, thus eliminating as much distraction as possible.

Learners were asked for their help in evaluating the printing materials. They were asked to circle any unclear words and place a check beside any illustrations, examples, or explanations that were unclear in the instructions. However, they had to keep working through the materials to the end without stopping for discussion.

Each learner was administered a two part pretest to determine if he met the requirements to continue with the instruction. As illustrated in Table 8, the scores from the first part of the pretest of each learner were recorded on the left side of the table. As shown by Table 8, three subjects are displayed and charted from 1 to 3. The three subjects included learners from the small-group evaluation. Table 8 showed subject #1 scoring four correct answers out

of a total of 10 questions for the first part of the pretest. As indicated by the three learners of the small-group, the scores shown for each were recorded as below average which was expected of them. If the learner's scores matched those of their postest scores (illustrated on the right side of the same table), then the learner would not be a good subject for the study. On the contrary, learners of the small-group had lower test scores for the pretest who then showed 100% accuracy on thepost test, indicating that learning did take place. As illustrated by Table 8, the pretest scores of the learners did not differ much among the learners of the small-group.

Table 8

PART ONE SCORES

SUBJECT	PRETEST	POST TEST
1	4/11	11/11
2	5/11	11/11
3	3/11	11/11
Mean %	37%	100%

Upon finishing the first part of the pretest, the learners were administered the second part of the pretest. As indicated by the learners, each failed to create a data base with an actual application of CONDOR Data Base Management System software. These results in comparison to the exact post test successful completion by each learner indicated that learning did occur. Consequently, it can safely be said the pretest was a true instrument for testing the ability of each learner. The second part of the pretest is shown in Appendix D.

Table 9 shows the time required for each learner to complete the instructional materials. As illustrated by the Table 9, times varied between each learner. This indicator heightened more so between the learners of the one-on-one evaluation and those learners of the small-group evaluation. As mentioned earlier, the learners of the one-on-one evaluation were talked through the instruction. Therefore, their completion times would be higher than the learners of the small-group. However, the times of all the learners between both groups varied slightly except subject six of the small-group. Table 9 shows subject six's time recorded for the format lesson as much higher than subject 4 & 5 of the small-group. This can be attributed to subject six needing more remediation of the information in the format lesson.

Table 9

TIMES RECORDED

	SUBJECT	INTRO.	FORMAT	DEF & DATA	DATA ENTRY	TIME SPENT
One on One	1	14:10	17:56	9:02	10:20	52:58
	2	12:36	16:42	8:15	9:32	47:05
	3	13:05	15:55	8:20	9:15	46:35
Small Group	4	4:10	7:40	4:05	4:20	20:15
	5	3:13	4:56	2:59	4:45	15:53
	6	3:33	10:15	3:42	4:32	21:57

Illustrated in Table 10 are the percentile of items grouped by each lesson. It illustrates better performance of scores with each ongoing lesson. This was contributed to the learners becoming more comfortable with the instructional materials and the embedded items, and what was expected of them.

Overall, it showed the learners of the small-group, whose materials were earlier revised from the one-on-one process, successfully completed each embedded test item of the instruction. Raw data to the percentile of items grouped by each lesson is shown in Table 6 and 7.

Table 10

ITEMS GROUP/PERCENTILE

SUBJECT	INTRO	FORMAT	DEF & DATA	DATA ENTRY
1	60%	75%	100%	88%
2	75%	82%	88%	100%
3	100%	87%	88%	88%

Each learner was administered a two part post test. The results of the first part of the post test is shown in Table 8. It illustrated the learners successfully answered all of the questions. For the second part of the post test, the learners were required to create a data base with an actual CONDOR Data Base Management System Software. The learners had to display the following on the screen: name data base, design fields, give definition, and enter data into those fields. The results indicated that the learners gained the necessary skills to complete the task of creating a data base. Thus, the terminal objective of the training program was met. The second part of the post test is shown in Appendix F.

Summative Evaluation

As mentioned earlier in the overview of this chapter, the approach to the summative evaluation was based on the work as described by Don Kirkpatrick (1975). What Kirkpatrick has done is to suggest techniques for conducting the summative evaluation. He has done this by dividing the summative evaluation into four logical steps as defined in the below illustration:

FOUR LEVELS OF EVALUATION

Level I	Reaction	Learners opinion of program
Level II	Learning	Measures learner's achievement of program's objectives
Level III	Behavior	Identifies individuals performance on the job following training
Level IV	Results/Impact	Measures bottom line, results of training upon the organization

Level I Reaction

The first step in the summative evaluation was to measure how well the learners liked training. It was important to determine how the learners felt about the training program they attended. To help measure each learners reaction, the designer used the evaluation checklist questionnaire which was administered after the program. Additionally, comments gathered from the learner focused on how they felt about the program. The designer found from the data information gathered that the learner's liked the individual approach to the computer-assisted instruction module. They expressed "no peer pressure" in completing the program. Also, learners liked the way they were allowed to finish the training program at their own pace.

Level II Learning

Kirkpatrick (1975) stated "For the purpose of evaluation, learning is defined as attitudes that were changed and knowledge and skills that were learned." (P. 309) Consequently, it was much more difficult to measure learning than it was to measure reaction for the existing program. To help measure learning, the designer devised measuring instruments to evaluate what was learned. The measuring instrument consisted of the pretest and post test,

which were similiar. This enabled the designer to measure what the learner actually learned after the training program. As illustrated by Figure 2, all of the learners failed the pretest but passed the post test. The learners were expected to fail the pretest. It would have been extremely difficult to measure whether learning occurred, if the learner had passed the pretest and post test.

Figure 2

Pretest and Post Test Results

	PRETEST	POST TEST
LEARNERS	6 FAILED	6 PASSED

Level III Behavior

This third step of Kirkpatrick's four levels of evaluation was not conducted for this project. However, if it had been incorporated the following approach would be implemented. The designer would conduct interviews with each learner within two to three months following the training program. The interviews would be conducted in the learner's worksite to obtain information regarding changes in behavior that had taken place. In addition, interviews would be conducted with the learner's immediate supervisor as another measure of changes in the learner's behavior. Further, the designer would arrange for learners to participate in a follow-up session. This session would enable learners the opportunity to analyze their experiences of the new skills learned.

Level IV Result

The designer did not conduct the result step of the summative evaluation for this project. However, if it was conducted the following approach would be taken. From an evaluation standpoint, the designer would evaluate the training program directly in terms of results desired. The principal result desired would be the learners improved knowledge which would result in better understanding and ability to create a data base. Their ability to design data bases will be applied to other learning programs in which they work. Other factors such as improved efficiency, increase in quality and quantity of production, and attitude will be measured.

Summary

This chapter emphasized the formative evaluation in collecting data and revising the instruction in order to make it more effective. Initial gathering of data information was with the subject matter expert, who provided valuable input into revising the instruction. Areas of focus centered on (1) whether lessons should use Application/Simulation or Fill-in-Blank techniques, (2) format, either linear or branching, (3) wording of text for clarity and accuracy.

The formative evaluation was divided into two phases: (1) one-to-one evaluation and (2) small-group evaluation. In the one-to-one evaluation, designer read along with each learner the materials of the instruction. This approach was to gather data information by reviewing the learner's comments. Learner's comments helped in locating areas of difficulty within the instruction. Also, each learner was asked to explain why they chose a particular response to the test items. This approach proved invaluable in

revising the instruction as both obvious as well as deeper hidden faults were surfaced from the one-to-one evaluation process to help in improving the instruction. In the small-group evaluation process, the designer administered the instructional materials to three learners in a setting as close to a real-life situation as possible. Learners were instructed that their help in evaluating the materials was needed. Any area of difficulty was to be circled or checked but that they should keep working through the materials to the end without stopping for discussion. The approach of reading along with the learner was a major difference between the two phases.

Tables were illustrated to show learner's performance on the instruction. Generally speaking, learners performance among themselves ranged from similar to slightly different which was expected. The performances were helpful in evaluating the materials as the overall performances of the learners indicated mastery of items and objectives of the program which is what the program was set out to accomplish.

The summative evaluation was discussed in terms of the work of Don Kirkpatrick's Four Levels of Evaluation. The four levels of evaluation are reaction, learning, behavior, and results.

CHAPTER 7

SUMMARY AND RECOMMENDATIONS

Introduction

In this chapter, a summary of the contents for the instruction is given. It includes the method and procedures used for the training program. It concludes with a set of recommendations that provide suggestions to anyone who wants to extend the program to another area or population.

Method and Procedures Used

The method used to develop the training program was based on the Systematic Design of Instruction (ISD). The systematic approach was utilized by incorporating it into steps and procedures. The steps and procedures were grouped into five phases: analysis, design, development, implementation, and evaluation.

Analysis

The instructional design process began with the identification of a need. After the identification of the need, the first step was to analyze the job tasks. A list of tasks was developed which helped to determine the logical sequence and how they interrelated with each other to meet the instructional goal. During the instructional goal process, plans for the development of the training program were established. To help plan the developmental effort, the designer used the Program Evaluation Review Techniques (PERT) to determine the specific activities that made up the instructional program for this project.

Design

This phase of the systematic approach began with the identification of entry behaviors to determine skills necessary for the learners to have before undertaking the instruction. Additionally, the learning objectives were designed and developed. These objectives were designed to describe exactly what the learner would be able to do when each learner completed the instruction. Subsequently, each learning objective was related to one or more learning activity. The content of each activity described tasks the learner must perform during the instruction. To test exactly how well the objectives met the instruction, an assessment system was used by the designer which included the pretest, embedded test, and the post test. Two types of evaluation were designed to conduct the evaluation process: the formative and summative evaluation.

Development

In this phase, the instructional activities were developed based on the task performing objectives, learning activities, assessment and the evaluation systems as defined in the design phase. The development scheme used for the learning activity was based on the nine events of instruction. The method used for the instruction was the computer-assisted instruction. Materials for evaluation were produced to help determine whether the instruction was effective or needed revision. Review of the instructional materials and the evaluation materials were done.

Implementation

All of the materials produced during the development phase were tested to determine whether the program was effective or needed revisions. The

implementation process consisted of the materials being given to selected learners and a small group that represented the target population. Data were gathered from several sources: (1) test data were collected from the entry behavioral questionnaire, pretest, embedded test, post test, and evaluation checklist questionnaire; (2) comments made by the learners during the instructional materials about difficulties encountered with the materials; (3) recommendation's from the SME. The designer collected the data and used it to revise the materials. A final version of the instructional materials and evaluation materials were reproduced.

Evaluation

The designer conducted the formative evaluation which was divided into two phases: (1) one-on-one evaluation and (2) small-group evaluation. The formative evaluation was conducted during the development of the instruction. The emphasis was on collection of data and revision of the instruction to make it more effective. The final activity conducted by the designer was the summative evaluation. Two of the four levels of the summative evaluation conducted were reaction and learning.

Conclusion

Much effort was put into the analysis, design, development, implementation, and evaluation of the existing CONDOR Data Base Tutorial program. The evaluation process showed that the program was effective in meeting the terminal objective. The formative evaluation process indicated where revisions of the computer-assisted instruction module were needed. The results of the summative evaluation process showed that all of the learners

successfully completed the post test and achieved the learning objectives of the program. Thus, the program was appropriate to have data processing technicians learn CONDOR Data Base Management System Software.

Recommendations

1. The development of the existing computer-assisted instruction module consisted of four lessons: introduction, format, definition and data, and data entry; which were necessary to creating a data base. However, content of the program could be extended to cover other functions; listing, sorting, printing, and changing data in a data base. What is needed is the implementation of another training program to cover the additional functions.

2. Although the content of each screen was well presented, it was felt areas of improvement could be incorporated into the program. For example, when reading the information from a screen with similiar information, instead of presenting the next screen with continuing information, partial review of the information could be presented on the next screen, so continuity of information would be smoother or maybe a message appearing at the bottom of the screen explaining additional information of the same type would be continued on the next screen.

3. Although the one-on-one and small group trials were implemented and evaluated, a truer measurement of the materials could be achieved if the designer were able to conduct the field trial of the formative evaluation. Basically, it would have helped to determine if the changes made after the small group process were affective, thus allowing the instruction to be used in the environment for which it was intended for.

4. As a part of the instruction, follow-through activities about what learners have learned from the training program should be incorporated. Because the program required 100% level of performance on the post test, focus on the follow-through activities should be after completion of training. This could be accomplished by promoting continuing learning by (a) evaluating each learner ninety days after the program, (b) organizing a follow-up training program to determine if remediation or enrichment materials are necessary, (c) coordinating with first-line supervisors to encourage learners to review and extend their learning to their performance, (d) obtaining committment from management to encourage the backing of the new learned skills from their workers.

5. Although the McGraw-Hill Authoring System was sufficient on designing the computer-assisted instruction (CAI) module, it was felt improvement could have been made with an authoring language. Whereas, the McGraw-Hill Authoring System was limited because of predesigned menus, an authoring language would have provided the designer a wider flexibility in design screens. For example, back to back screens of continuing information could have been timed to automatically advance the second screen of information, thus providing continuity of thought of information. Remembering that the CAI module is self-paced, the designer programmed the capability to allow the learner to review information of an earlier screen.

Concluding Statement

The designer spent much time and effort into the development of the training program for this project. Its primary development was to provide training for Data Processing Technician's of the Naval Reserves to learn

CONDOR Data Base Management System. The knowledge and experience gained from the tutorial data base program will give them the necessary tools to creating a data base at their workstations. Secondly, it is hoped the concepts underlying the design and development of the CONDOR tutorial data base program can be used as a guideline to others undertaking a similiar project.

APPENDIX A

JOB TASK ANALYSIS

JOB TASK ANALYSIS

Task	Description	Standard
1. Switch "On" Button	Turn Personal Computer on	*
2. Insert System Disk	Place CONDOR Data Base Management System Disk Into Drive A	
3. Insert Data Disk	Place Data Disk into Drive B	
4. Call Up CONDOR	At A: prompt, type CONDOR to call up Data Base Management System (DBMS)	
5. Name Data Base	Indicate to System you are creating a new data base and then name it	
6. Create Format File	Enter command statement format to begin formatting field(s)	
7. Name Field	Name each field of record	
8. Allocate Field Size	Allocate number of characters for each field	
9. Check for Errors	Locate any errors on screen and correct them	

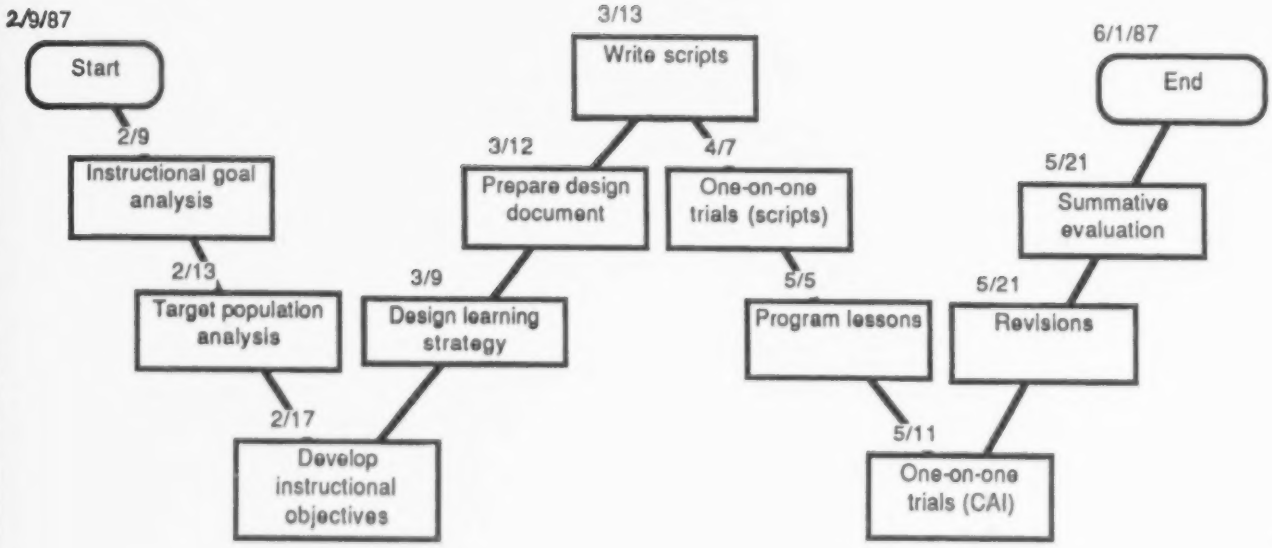
	Task	Description	Standard
10.	Save File	Save Format file	*
11.	Define Definition and Data File	Acknowledge System by typing in "Yes" to define definition and data file	
12.	Enter Field Type Code	Identify field type code as alphanumeric, numeric, and Julian date	
13.	Check for Errors	Locate any errors on screen and correct them	
14.	Create Entry Field	Type Enter to display data entry screen	
15.	Enter Data	Enter data into each field of data base	
16.	Check for Errors	Locate any errors on screen and correct them	
17.	Save Data Entry	Save record(s) with data information entered	

Each learner was able to do the task completely before entering onto the the next task. The criterion was for each learner to work independently and complete creation of data base file.

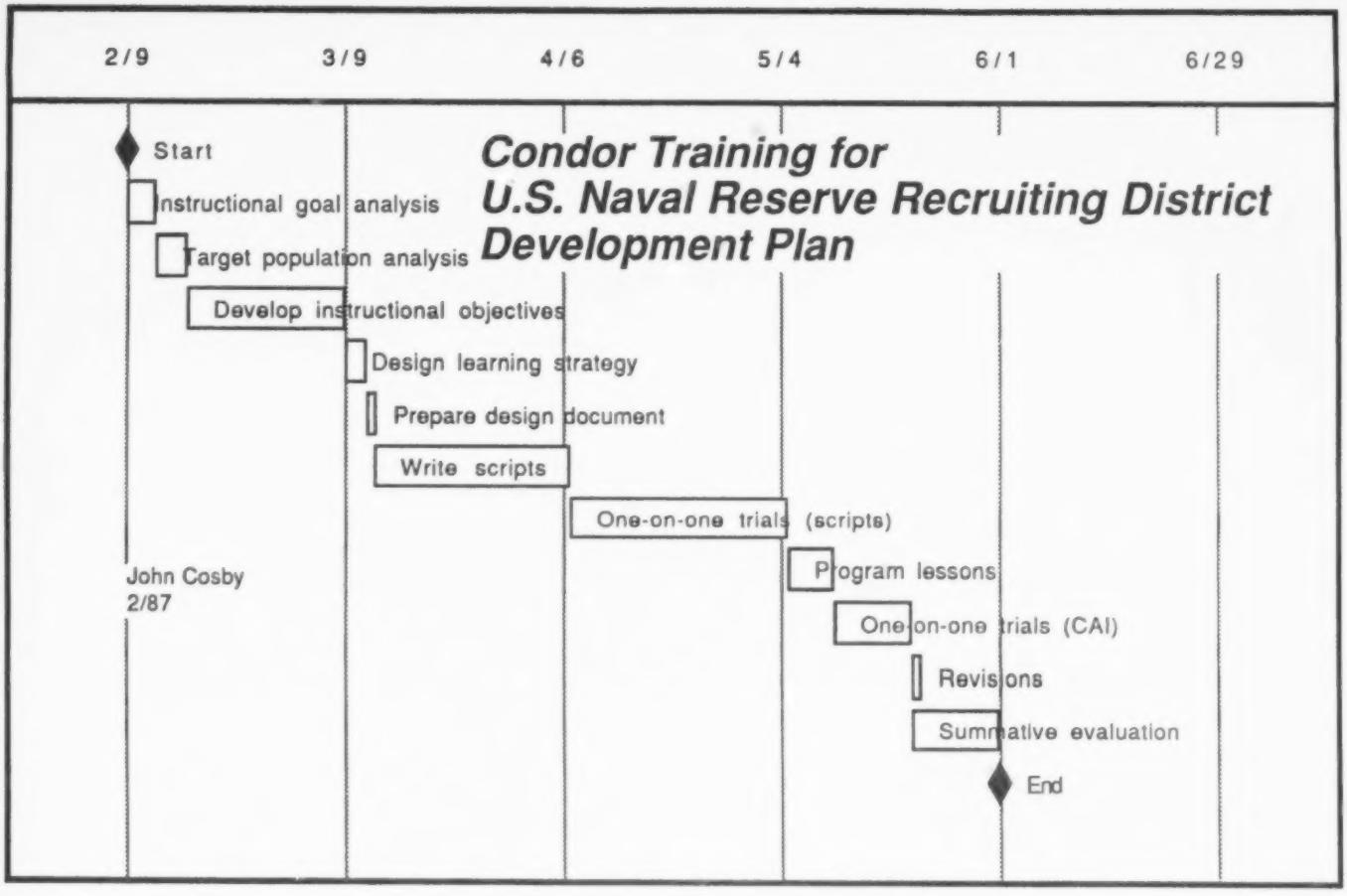
APPENDIX B

PROJECT PLANNING

Condor Training for U.S. Naval Reserve Recruiting District Development Plan



John Cosby
2/87


2/9
3/9
4/6
5/4
6/1
6/29
Start
Instructional goal analysis
Target population analysis
Develop instructional objectives
Design learning strategy
Prepare design document
Write scripts
One-on-one trials (scripts)
Program lessons
One-on-one trials (CAI)
Revisions
Summative evaluation
End
John Cosby
2/87
Condor Training for
U.S. Naval Reserve Recruiting District
Development Plan

APPENDIX C

INSTRUCTIONAL TASK ANALYSIS

INSTRUCTIONAL TASK ANALYSIS

1. Introduction to CONDOR 68

    1.1 -- enable learner to design and create a data base

    1.2 -- define a data base

    1.3 -- create a data base

    1.4 -- define a field

    1.5 -- create field name(s) for each field

    1.6 -- define a record

    1.7 -- discuss how record(s) become data base

2. Create Format File

    2.1 -- enter the command statement Format to begin the data entry screen display

    2.2 -- develop field name(s) and the number of characters allotted for each field

    2.3 -- locate any error(s) on the screen display and correct it before proceeding

    2.4 -- save the format file by using the CTRL and E keys simultaneously

3. Create Definition and Data Files

    3.1 -- define field type code

    3.2 -- enter field type code for each field

    3.3 -- identify Alphanumeric, Numeric and Julian date field type code

    3.4 -- locate any error(s) on the screen display and correct ot before proceeding

4. Data Entry

    4.1 -- type Enter to identify data entry screen

    4.2 -- observe data screen display which is similar to the format file

    4.3 -- enter data into each field

    4.4 -- examine screen display with information entered

    4.5 -- locate any error(s) and correct them before proceeding

    4.6 -- save record(s) with information entered

APPENDIX D

PRETEST

PRE-TEST

Part One

1. To create a name for a data base, what is the standard maximum number of characters you may use? _____

2. To create a record for a data base, you must build which of the following first?

   a) word

   b) sentence

   c) file

   d) field

3. Do you know how to create the format file for a data base?

   ____Yes ____No

4. Do you know how to create the definition file for a data base?

   ____Yes ____No

5. When you use Command Format, it allows you to create a data base by building which of the following file(s)?

   a) format

   b) definition

   c) data file

   d) all of the above

6. The _____ (format, definition, or data) file contains the display that appears on the screen when you enter data into the data base.

7. The _____ (format, definition, or data) file contains the field for the data base and the number of characters you wish to allot for each field.

8. When you are going to create the definition and data file for your data base, you have to enter the field type code. The code AN identifies a particular field as an _____ field.

9. The code $ identifies the field as a _____ field.

10. The code J identifies the field as a _____ field.

11. When you have correctly created the format, definition, and data files for a data base, you are now ready to enter _____ into the data base.

PRETEST

SECOND PART

1. Given a Zenith 248 Personal Computer and CONDOR Data Base Management System Software, you will be able to build a data record containing the following fields: recruiter name, SS#, command, rate, and start date.

Steps to remember:

a. To create a format file type FORMAT Recruiter

b. Type field names and underscores

c. Save format files with CTRL and E keys

d. Enter field type code

e. Enter Recruiter to begin date entry screen

f. Save data base

APPENDIX E

INSTRUCTIONAL MATERIALS

LESSON NAME: INTRO

DESCRIPTION: introduction

FIRST SCREEN: screen

FEEDBACK: y

DISPLAY ANSWER: y

BACK-UP FEATURE: y

STOP FEATURE: y

U/F VIDEO: n

1. SCREEN NAME: CONDOR ,

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

74

..

to help you understand and

learn to use Condor system as

quickly as possible. I have

developed a series of lessons

in creating a data base

So let's begin

FOREGROUND COLOR: 15
BORDER COLOR: 2
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN1

...

BEST COPY AVAILABLE

2. SCREEN NAME: SCREEN1

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

75

Imagine that you have been selected Captain of a small recruiting command. Assigned to you are recruiter's to complete the mission. You would like to create a data base using Condor that will help to keep track of certain recruiter's information.

FOREGROUND COLOR: 2
BORDER COLOR: 2
BACKGROUND COLOR: 4
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN

3. SCREEN NAME: SCREEN2

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

76

This information needs to be both kept current and accessed as easily as possible. The information to be stored in the data base are name, ss#, command rate, and start date.

FOREGROUND COLOR: 2
BORDER COLOR: 2
BACKGROUND COLOR: 4
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN3

4. SCREEN NAME: SCREEN3

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

77

You will be creating a

To keep information on each

recruiter.

FOREGROUND COLOR: 15
BORDER COLOR: 2
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: +DATA BASE+

WRONG ANSWER(1): CONDOR
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 14 ROW: 08
BRANCHES:
CORRECT: SCREEN4
WRONG(1): SCREEN2
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN2

5 SCREEN NAME: SCREEN4

SECTION: 1
VIDEO: N
GRAPHICS: N

78

TYPE OF SCREEN: presentation

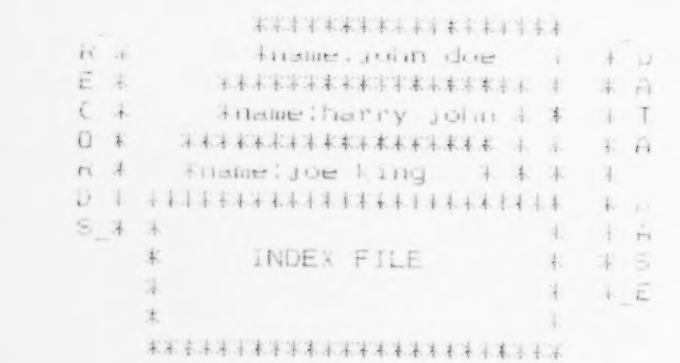
Data base

FOREGROUND COLOR: 2
BORDER COLOR: 2
BACKGROUND COLOR: 8
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN5

6. SCREEN NAME: SCREEN5

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation



An index file box with recruiter information cards is similiar to a data base. Each card in the box contains important information about an individual recruiter.

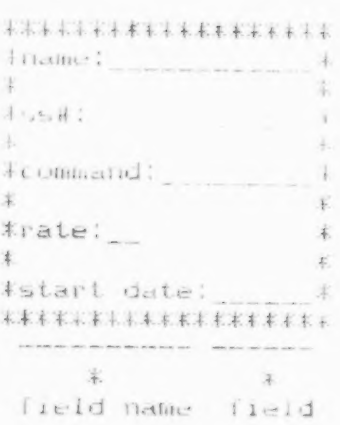
FOREGROUND COLOR: 7
BORDER COLOR: 2
BACKGROUND COLOR: 4
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN6

7. SCREEN NAME: SCREEN7

SECTION: 1
VIDEO: N
GRAPHICS: N

80

TYPE OF SCREEN: presentation



The blank spaces where data is to be entered are called field(s). Each field is given a field name, such as, name, ss#, and start date.

FOREGROUND COLOR: 15
BORDER COLOR: 2
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN7

8. SCREEN NAME: SCREEN7

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

```
**********************
*name:_____  *
*                    *
*ss#:_____   *
*                    *
*command:_____*
*                    *
*rate:__             *
*                    *
*start date:_____*
**********************
```

Fill in the blank space that best

describes that part of the recruiter

information card

```
**********************************************
```

FOREGROUND COLOR: 1
BORDER COLOR: 2
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *FIELD NAME*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 16 ROW: 02
BRANCHES:
CORRECT: SCREEN8
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN6

9. SCREEN NAME: SCREEN3

SECTION:
VIDEO: N
GRAPHICS: N

82

TYPE OF SCREEN: presentation

```
**********************
*name:joe smith      *
*                    *
*ss#:056-44-7561     *
*                    *
*command:ft scott    *
*                    *
*rate:dp             *
*                    *
*start date:05/23/87 *
**********************
```

After data has been written into the fields, as shown above, the card becomes a recruiter information record. Records for one or more recruiters form a data base.

FOREGROUND COLOR: 1
BORDER COLOR: 2
BACKGROUND COLOR: 8
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN3

10. SCREEN NAME: SCREEN9

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

The recruiter information card was designed with field names and fields. After entering data into the field, the card becomes a _____, of which one or more forms a data base.

FOREGROUND COLOR: 1
BORDER COLOR: 2
BACKGROUND COLOR: 6
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *RECORD#

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 05 ROW: 10
BRANCHES:
CORRECT: SCREEN10
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: *CONTIN:

11 SCREEN NAME: SCREEN10

84

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

This is the end of the

introduction section

FOREGROUND COLOR: 7
BORDER COLOR: 1
BACKGROUND COLOR: 4
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN11

12. SCREEN NAME: SCREEN11

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

Now you wish to use the command format to create the format definition and data files of the data base called Recruiter.

FOREGROUND COLOR: 12
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN12

13 SCREEN NAME: SCREEN13

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

Now let's begin to format the recruiter file by performing the following task at the keyboard and video screen

Type: format _____

(in the blank space above type in recruiter since it will be the name of the data base that you will be creating)

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 5
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 80 columns
CORRECT ANSWER: &RECRUITER

WRONG ANSWER(1): RECRUITE
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 24 ROW: 11
BRANCHES:
CORRECT: CNTINU
WRONG(1): SCREEN13
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN13

14. SCREEN NAME: SCREEN13

SECTION:
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

87

The name of your data base
recruiter must be eight characters
or less. Therefore, create the
recruiter data base by renaming
it recruitr (dropping the last e)
so that it is eight characters.

Type Format _____
(recruitr)

****
FOREGROUND COLOR: 13
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: (RECRUITR)

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 20 ROW: 15
BRANCHES:
CORRECT: SCREEN14
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN14

15. SCREEN NAME: SCREEN14

88

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

Now you have correctly

typed in the data base

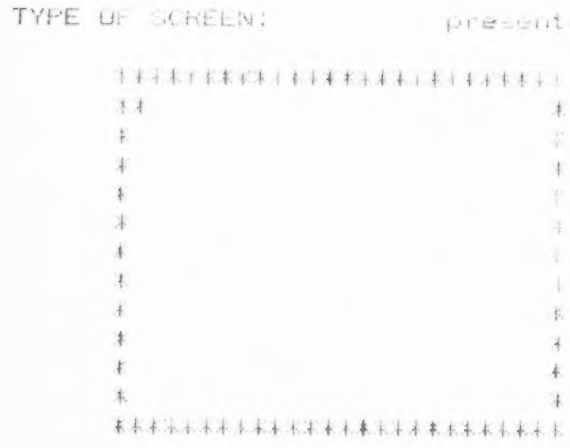
called Recruitr.

FOREGROUND COLOR: 12
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN15

16 SCREEN NAME: SCREEN15

SECTION:
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation



After typing Format Recruitr, and pressing the return key, the system will display a blank screen with the cursor in the left-hand corner, indicating you you are ready to create the format file

FOREGROUND COLOR: 12
BORDER COLOR: 7
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN16

17. SCREEN NAME: SCREEN16

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

After typing format recruit and pressing the return key, the system will display a _____ screen, indicating you are ready to create a format file.

FOREGROUND COLOR: 2
BORDER COLOR: 5
BACKGROUND COLOR: 4
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: [BLANK]

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

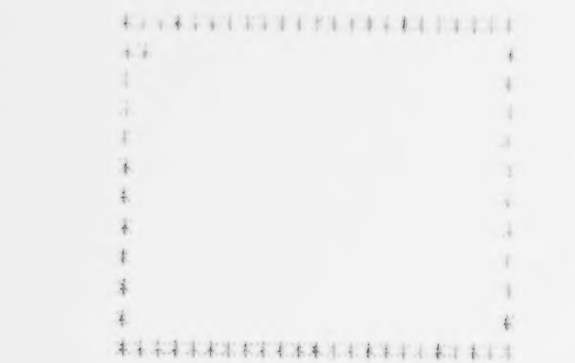
ACCEPT ANSWER AT
COLUMN: 16 ROW: 16
BRANCHES:
CORRECT: SCREEN17
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN15

18 SCREEN NAME: SCREEN17

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation



With the cursor at the upper left-hand screen, you are ready to create the format file

But first . . .

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN18

19. SCREEN NAME. SCREEN16

SECTION: 2
VIEW: N
GRAPHICS: N

TYPE OF SCREEN: presentation

92

An explanation is needed for

a format file...

A format file contains field

names and the number of characters

you wish to allot for each field

FOREGROUND COLOR: 12
BORDER COLOR: 5
BACKGROUND COLOR: 6
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN19

29. SCREEN NAME: SCREEN.2

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

For example, one of the field names for the recruit data base is name. You will allot 15 characters for this field.

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 5
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN.0

21. SCREEN NAME: SCREEN20

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

94

Name is a field name for

the data base recruitr. Fifteen

is the number of _____

alloted for this field

FOREGROUND COLOR: 14
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: (CHARACTERS)

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 22 ROW: 09
BRANCHES:
CORRECT: SCREEN21
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN19

22 SCREEN NAME: SCREEN.1

SECTION: 2
VIDEO: N
GRAPHICS: N

95

TYPE OF SCREEN: presentation

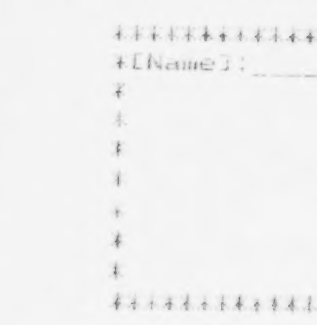
Now lets begin to create the format file for the data base Recruit by building the field names and number of characters for each field

FOREGROUND COLOR: 7
BORDER COLOR: 5
BACKGROUND COLOR: 3
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN.2

23 SCREEN NAME: SCREEN23

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y



After [Name]: type 15 underlines in the answer blank. The underlines are created by holding down the shift key and pressing the underline key 15 times.

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *_____*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

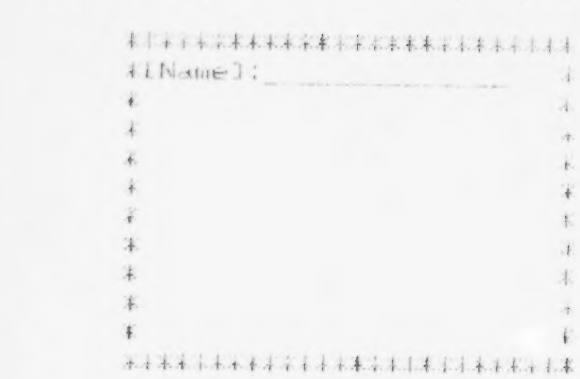
ACCEPT ANSWER AT
COLUMN: 14 ROW: 01
BRANCH:
CORRECT: SCREEN24
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN23

24. SCREEN NAME: SCREEN23

SECTION: 2
VIDEO: N
GRAPHICS: N

TEXT IN SCREEN: presentation



The brackets placed around [Name]: indicates to the system that it is a field name.

The 15 underlines are the number of characters that you will allot for the field, name.

FOREGROUND COLOR: 7
BORDER COLOR: 5
BACKGROUND COLOR: 8
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN24

25 SCREEN NAME: SCREEN4

SECTION: 2
VIDEO: N
GRAPHICS: N

98

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

You must place _____

around the field name

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: {BRACKETS}

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 22 ROW: 06
BRANCHES:
CORRECT: SCREEN5
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN23

26. SCREEN NAME: SCREEN25

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: Fill in blank
INCLUDE IN REPORTING. Y

```
+++++++++++++++++++++++++++++
#[Name]:                    +
*                           +
*_____ ----------           F
|                           t
L                           F
|                           ;
+                           +
+++++++++++++++++++++++++++++
```

Directly under [Name]:, type in

[SS#]: in the answer blank. Don't

forget to type brackets around SS#

and colons after the last bracket

99

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: Full page
COLUMNS: 40 columns
CORRECT ANSWER: #[SS#]:#

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 07 ROW: 03
BRANCHES:
CORRECT: SCREEN26
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN26

27. SCREEN NAME: SCREEN26

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

100

If you were to type social

security number instead of SSN,

you would have to type a period ( )

between the words, such as, [Social

Security Number]:

You must type a

between Social Security Number

This indicates to the syster

that they are separate words.

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: #PERIOD#

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 23 ROW: 12
BRANCHES:
CORRECT: SCREEN27
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

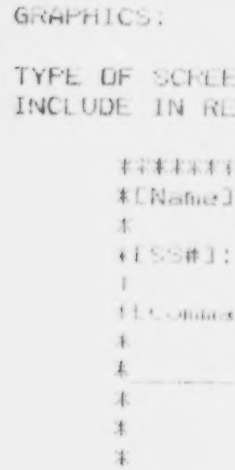
OTHERWISE: SCREEN27

```
      26   SCREEN NAME:  SCREEN.7

SECTION:                    2
VIDEO:                      N
GRAPHICS:                   N

TYPE OF SCREEN:             fill in blank
INCLUDE IN REPORTING:       Y

        ********************************
        *[Name]:                       *
        *                              *
        *[SS#]:                        *
        *                              *
        *_____ ___________            *
        *                              *
        *                              *
        *                              *
        *                              *
        *                              *
        ********************************

   Type in the following information.

  [Command]: in the answer blank  that's

  before the 14 underline characters.


 ********************************************
FOREGROUND COLOR:           15
BORDER COLOR:               5
BACKGROUND COLOR:           2
DISPLAY SPEED:              by page
AUTO ADVANCE:               N
FORMAT:                     full page
COLUMNS:                    40 columns
CORRECT ANSWER:   *[COMMAND].*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 08      ROW: 05
BRANCHES:
  CORRECT:                  SCREEN.8
  WRONG(1):
  WRONG(2):
  WRONG(3):
  WRONG(4):

  OTHERWISE:                SCREEN.7
```

29 SCREEN NAME: SCREEN23

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y



Type in the following information.

[Rate]: in the answer blank that's

before the 2 underline characters.

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: #[RATE]:#

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 07 ROW: 07
BRANCHES:
CORRECT: SCREEN29
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN23

30. SCREEN NAME: SCREEN29

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

```
        ************************************
        #[Name]:                           #
        #                                  #
        #[SS#].                            #
        #                                  #
        #[Command]:                        #
        !                                  !
        ![Rate]:                           !
        #                                  #
        #_____ ________                    #
        #                                  !
        ************************************
```

Type in the following information,

[Start Date]: in the answer blank

that's just before the o underline

characters.

```
 ++++++++++++++++++++++++++++++++++++++++
FOREGROUND COLOR:          15
BORDER COLOR:              5
BACKGROUND COLOR:          1
DISPLAY FIELD:             by page
AUTO ADVANCE:              N
FORMAT:                    full page
COLUMNS:                   40 columns
CORRECT ANSWER:  #[START DATE]:#

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 08     ROW: 09
BRANCHES:
  CORRECT:                 SCREEN30
  WRONG(1):
  WRONG(2):
  WRONG(3):
  WRONG(4):

  OTHERWISE:               SCREEN29
```

31. SCREEN NAME: SCREEN30

SECTION:
VIDEO: N
GRAPHICS: N

104

TYPE OF SCREEN: presentation

```
*****************************
#[Name]:                    #
#                           #
#[SS#]:                     #
#                           #
#[Command]:                 #
#                           #
#[Rate]:                    #
#                           #
#[Start Date]:              #
*****************************
```

You typed 8 underlines after

[Start Date]. Because you will enter

a date in this field, entered dates

are displayed on the screen in the

format MM/DD/YY. For example, January

21, 1987 would be displayed 01/21/87.

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN31

32 SCREEN NAME: SCREEN31


```
SECTION:                    2
VIDEO:                      N
GRAPHICS:                   N

TYPE OF SCREEN:             fill in blank
INCLUDE IN REPORTING:       Y

        ****************************
        *[Name]:                   *
        *                          *
        *[SS#]:                    *
        *                          *
        *[Command]:                *
        *                          *
        *[Rate]:                   *
        *                          *
        *[Start Date]:_____        *
        *                          *
        ****************************

    At the keyboard and video screen

        Type: May 22, 1987 following

              [Start Date]:

 ********************************************
FOREGROUND COLOR:           2
BORDER COLOR:               5
BACKGROUND COLOR:           4
DISPLAY SPEED:              by page
AUTO ADVANCE:               N
FORMAT:                     full page
COLUMNS:                    40 columns
CORRECT ANSWER:  05/22/87

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 21      ROW: 09
BRANCHES:
  CORRECT:                  SCREEN32
  WRONG(1):
  WRONG(2):
  WRONG(3):
  WRONG(4):

  OTHERWISE:                SCREEN30
```

111a

33. SCREEN NAME: SCREEN32

SECTION: 2
VIDEO: N
GRAPHICS: N

106

TYPE OF SCREEN: presentation

```
*****************************
*[Name]:_________________   *
*                          *
*[SS#]:_________           *
*                          *
*[Command]:_____________   *
*                          *
*[Rate]:__                 *
*                          *
*[Start Date]:________     *
*****************************
```

Lets suppose you noticed an error on the screen after you typed in the last field name .... [Start Date].

Turn to the next page

FOREGROUND COLOR: 14
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMN: 40 columns
BRANCH: SCREEN33

34. SCREEN NAME: SCREEN33

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

To correct an error on the screen, press the appropiate arrow keys until you have positioned the cursor directly underneath the error. Then use the delete key and retype the information.

FOREGROUND COLOR: 6
BORDER COLOR: 5
BACKGROUND COLOR: 3
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN34

35. SCREEN NAME: SCREEN34

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

108

To correct an error on the

screen, press the appropiate _____

key and then the delete key.

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 (default)
CORRECT ANSWER: +ARROW+

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 32 ROW: 05
BRANCHES:
CORRECT: SCREEN35
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN35

36. SCREEN NAME: SCREEN35

SECTION: 2
VIDEO: N
GRAPHICS: N

109

TYPE OF SCREEN: presentation

Arrow keys

and

Delete keys

Then retype the information

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN36

37. SCREEN NAME: SCREEN36

SECTION:
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

```
*****************************
*[Name]:__________________  *
*                          *
*[SS#]:___________         *
*                          *
*[Command]:______________  *
*                          *
*[Rate]:__                 *
*                          *
*[Start.Date]:________     *
*****************************
```

Now that you have checked the screen for accuracy, you wish to save the format file.

This can be done by ....

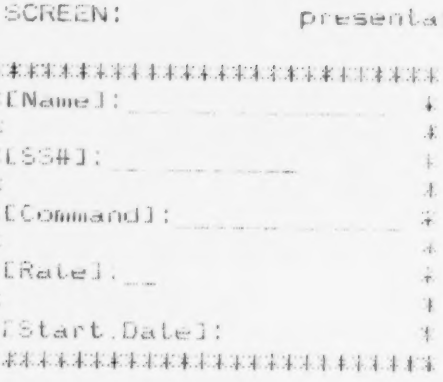
FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN37

38. SCREEN NAME: SCREEN37

SECTION:
VIDEO: N
GRAPHICS: N

111

TYPE OF SCREEN: presentation



While holding down the Ctrl key, press the E key. This tells the system to save the Recruitr Format File that you have created

FOREGROUND COLOR: 2
BORDER COLOR: 5
BACKGROUND COLOR: 4
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN38

39. SCREEN NAME: SCREEN39

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: Fill in blank
INCLUDE IN REPORTING: Y

112

To save the Recruitr Format

File that you have created . . .

you need to hold down the Ctrl

key and press the F key

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: F4

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 21 ROW: 11
BRANCHES:
CORRECT: SCREEN39
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN37

40. SCREEN NAME: SCREEN39

SECTION: .
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation


```
!!!
```

41. SCREEN NAME: SCREEN40

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: Fill in blank
INCLUDE IN REPORTING: Y

114

Do you wish to define a

data base using this Format

(y/n)? Type_
(y)

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *Y*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

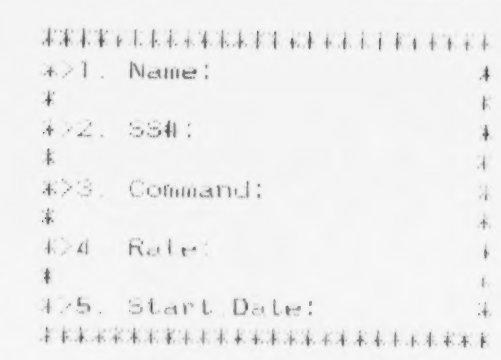
ACCEPT ANSWER AT
COLUMN: 24 ROW: 09
BRANCHES:
CORRECT: SCREEN41
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN40

42. SCREEN NAME: SCREEN41

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation



After typing Y to define a new data base using this Format (Y/N)? and pressing the return key, the above information appears on the screen

FOREGROUND COLOR: 15
BORDER COLOR: 3
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN42

43. SCREEN NAME: SCREEN42

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: presentation

116

You are going to create the definition file and the data file for the recruitr data base.

FOREGROUND COLOR: 15
BORDER COLOR: 3
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN43

44. SCREEN NAME: SCREEN43

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

```
**************************
*>1. Name: __            *
*                        *
*>2. SS#:                *
*                        *
*>3. Command:            *
*                        *
*>4. Rate:               *
*                        *
*>5. Start Date:         *
**************************
```

Type AN after >1. Name:

The code AN identifies the name field as an alphanumeric field. You may enter any combinations of letters,


```
**************************************
FOREGROUND COLOR:          1
BORDER COLOR:              3
BACKGROUND COLOR:          8
DISPLAY SPEED:             by page
AUTO ADVANCE:              N
FORMAT:                    full page
COLUMNS:                   40 columns
CORRECT ANSWER:  *AN*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 18     ROW: 01
BRANCHES:
  CORRECT:                 SCREEN44
  WRONG(1):
  WRONG(2):
  WRONG(3):
  WRONG(4):

  OTHERWISE:               SCREEN43
```

45. SCREEN NAME: SCREEN44

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

```
*****************************
*>1. Name: AN               *
*                           *
*>2. _______                *
*                           *
*>3. Command:               *
*                           *
*>4. Rate:                  *
*                           *
*>5. Start.Date:            *
*****************************
```

Type SS#: N after >2

The code N identifies the SS# field as a numeric field. You may enter only numbers.

```
 ************************************
FOREGROUND COLOR:          1
BORDER COLOR:              3
BACKGROUND COLOR:          8
DISPLAY SPEED:             by page
AUTO ADVANCE:              N
FORMAT:                    full page
COLUMNS:                   40 columns
CORRECT ANSWER:  *SS#: N*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 11     ROW: 03
BRANCHES:
  CORRECT:                 SCREEN45
  WRONG(1):
  WRONG(2):
  WRONG(3):
  WRONG(4):

  OTHERWISE:               SCREEN44
```

46. SCREEN NAME: SCREEN45

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

```
*****************************
*>1. Name: AN               *
*                           *
*>2. SS#: N                 *
*                           *
*>3. _-----------           *
*                           *
*>4. Rate:                  *
*                           *
*>5. Start Date:            *
*****************************
```

type Command: AN after >3.


```
*************************************
```

FOREGROUND COLOR: 1
BORDER COLOR: 3
BACKGROUND COLOR: 6
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: #COMMAND: AN#

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 11 ROW: 05
BRANCHES:
CORRECT: SCREEN46
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN45

47. SCREEN NAME: SCREEN46

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

```
**************************
*>1. Name: AN            *
*                        *
*>2. SS#: N              *
*                        *
*>3. Command: AN         *
*                        *
*>4. ________            *
*                        *
*>5. Start.Date:         *
**************************
```

Type Rate: AN after >4.

```
****************************************
FOREGROUND COLOR:          1
BORDER COLOR:              3
BACKGROUND COLOR:          8
DISPLAY SPEED:             by page
AUTO ADVANCE:              N
FORMAT:                    full page
COLUMNS:                   40 columns
CORRECT ANSWER:  *RATE: AN*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 12     ROW: 07
BRANCHES:
  CORRECT:                 SCREEN47
  WRONG(1):
  WRONG(2):
  WRONG(3):
  WRONG(4):

  OTHERWISE:               SCREEN46
```

48. SCREEN NAME: SCREEN47

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: Fill in blank
INCLUDE IN REPORTING: Y

```
*****************************
*>1. Name: AN               *
*                           *
*>2. SS#: N                 *
*                           *
*>3. Command: AN            *
*                           *
*>4. Rate: AN               *
*                           *
*>5. _____ -------*
*****************************
```

Type Start.Date: J after >5. in the answer blank that's before the 8 underline characters. The code J identifies the Start Date field as a Julian date field. The date format is MM/DD/YY.

FOREGROUND COLOR: 15
BORDER COLOR: 3
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *START.DATE: J*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 11 ROW: 09
BRANCHES:
CORRECT: SCREEN48
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN47

49. SCREEN NAME: SCREEN48

SECTION: 3
VIDEO: N
GRAPHICS: N

122

TYPE OF SCREEN: presentation

```
**************************
*>1. Name: AN            *
*                        *
*>2. SS#: N              *
*                        *
*>3. Command: AN         *
*                        *
*>4. Rate: AN            *
*                        *
*>5. Start.Date: J       *
*                        *
*>6. ((End))             *
*                        *
*  Definitions OK (y/n)? *
**************************
```

After defining Start.Date, the screen displays the above message:

((End)) and Definitions OK (y/n)?

FOREGROUND COLOR: 15
BORDER COLOR: 3
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN49

50. SCREEN NAME: SCREEN49

SECTION: 3
VIDEO: N
GRAPHICS: N

123

TYPE OF SCREEN: presentation

If you had typed an incorrect field type code (AN,N,J) above, press N (after definitions ok (y/n) and then you would move the arrow keys to the line of the field type code. Delete the character(s) and then retype the correct code

FOREGROUND COLOR: 12
BORDER COLOR: 3
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN50

51. SCREEN NAME: SCREEN50

SECTION: 3
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

124

Definitions OK (y/n)?

If you made no errors above or

have finished correcting any

errors...Type _
(y)

FOREGROUND COLOR: 15
BORDER COLOR: 3
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *Y*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 19 ROW: 12
BRANCHES:
CORRECT: SCREEN51
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN50

52. SCREEN NAME: SCREEN51

SECTION: 3
VIDEO: N
GRAPHICS: N

125

TYPE OF SCREEN: presentation

after typing Y, the system

saves the definition and data

files of the Recruitr data base.

FOREGROUND COLOR: 14
BORDER COLOR: 3
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: "SCREEN5."

53. SCREEN NAME: SCREEN52

SECTION: 4
VIDEO: N
GRAPHICS: N

126

TYPE OF SCREEN: presentation

You are now ready to enter

data

FOREGROUND COLOR: 15
BORDER COLOR: 7
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN53

54. SCREEN NAME: SCREEN53

SECTION: 4
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

Type Enter Recruitr at the

keyboard. As you do, it will

appear in the above blank spaces.

FOREGROUND COLOR: 15
BORDER COLOR: 8
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *ENTER RECRUITR*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 09 ROW: 01
BRANCHES:
CORRECT: SCREEN54
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN53

55. SCREEN NAME: SCREEN54

SECTION: 4
VIDEO: N
GRAPHICS: N

128

TYPE OF SCREEN: presentation

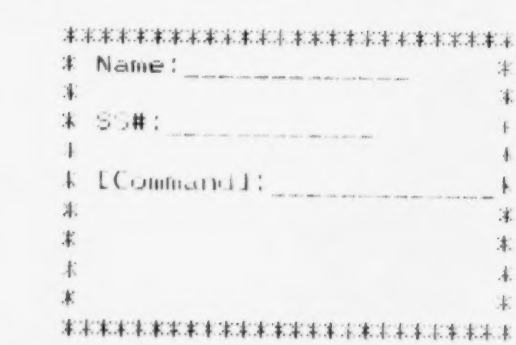
The data entry screen looks exactly like the format screen you created earlier except for one detail...the brackets that you around the field names are not displayed.

FOREGROUND COLOR: 15
BORDER COLOR: 8
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN55

56. SCREEN NAME: SCREEN55

SECTION: 8
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: application
INCLUDE IN REPORTING: Y



1. Type "Smith,John J.", which will appear in the field-Name-

2. Type "123-45-6789", which will appear in the field-SS#-

3. Type "ft Schuyler", which will appearin the field-Command-

FOREGROUND COLOR: 12
BORDER COLOR: 8
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
REDO: n

NUMBER OF TIMES TO REDO: 1

MODE: Interactive

Entry 1 Information:

COLUMN: 14
ROW: 1

SIZE OF INPUT FIELD: 13

EXECUTION ORDER: 1

TYPE OF FIELD: All characters

TYPE OF CHECKING: Value

ANTICIPATED ANSWER: smith, john j

HELP LINES: name of person
smith, john j

Entry 2 Information:

COLUMN: 13
ROW: 3

SIZE OF INPUT FIELD: 12

EXECUTION ORDER: 2

TYPE OF FIELD: All characters

TYPE OF CHECKING: Value

ANTICIPATED ANSWER: 123-45-6789

HELP LINES: numbers
123-45-6789

Entry 3 Information:

COLUMN: 19
ROW: 4

SIZE OF INPUT FIELD: 13

EXECUTION ORDER: 3

TYPE OF FIELD: All characters

TYPE OF CHECKING: Value

ANTICIPATED ANSWER: ft schuyler

HELP LINES: ft
schuyler

QUESTION RESPONSE BRANCHING

RESPONSES BRANCHES

All correct screen56

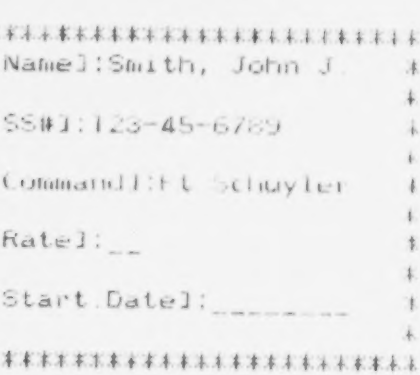
ALTERNATIVE COMBINATIONS

Otherwise screen55

57. SCREEN NAME: SCREEN56

SECTION: 4
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: application
INCLUDE IN REPORTING: Y



4 Type "DP", which will appear in field-Rate-

5. Type "05/22/87", which will appear in the field-Sart Date-

FOREGROUND COLOR: 15
BORDER COLOR: 1
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
REDO: Y

NUMBER OF TIMES TO REDO: 1

MODE: Interactive

Entry 1 Information:

COLUMN: 15
ROW: 7

SIZE OF INPUT FIELD: 2

EXECUTION ORDER: 1

TYPE OF FIELD: All characters

TYPE OF CHECKING: Value

ANTICIPATED ANSWER: DP

HELP LINES: D
DP

Entry 2 Information:

132

COLUMN: 21
ROW: 9

SIZE OF INPUT FIELD: 8

EXECUTION ORDER: 2

TYPE OF FIELD: All characters

TYPE OF CHECKING: Value

ANTICIPATED ANSWER: 05/22/87

HELP LINES: may 22,1987
05/22/87

QUESTION RESPONSE BRANCHING

RESPONSES	BRANCHES
All correct	screen57

ALTERNATIVE COMBINATIONS

Otherwise	screen57

58. SCREEN NAME: SCREEN57

SECTION: 4
VIDEO. N
GRAPHICS: N

TYPE OF SCREEN: presentation

133

If you notice an error on the screen after you typed in data, you would use the appropriate arrow keys and delete key.... and the

continue to next page

FOREGROUND COLOR: 12
BORDER COLOR: 0
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: SCREEN58

59 SCREEN NAME: SCREEN58

SECTION: 4
VIDEO: N
GRAPHICS: N

134

TYPE OF SCREEN: presentation

While holding down the CTRL key to save the record, press the E key to save the record. If you remember, one or more records form a data base. Therefore, you are well on your way to creating a data base.

The End

FOREGROUND COLOR: 15
BORDER COLOR: 8
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
BRANCH: EXIT

APPENDIX F

POST TEST

POST-TEST

FIRST PART

1. You use the Command _____ to create the format, definition, and data files.

2. The name of your data base, which must be _____ characters or less, is Recruit.

3. You entered the command statement _____ Recruit to write the data entry screen display and create the Recruit data base.

4. The _____ (format, definition) file also contains the field names for the data base and the number of characteristics you wish to allot for each field.

5. The twelve _____ (not hyphens) after [NAME]: indicate the size of this field is twelve characters.

6. The brackets placed around the words [NAME]: indicate to the system that they are a _____ name.

7. The total number of characters required for entering a date is _____.

8. If you find an error on the screen display, correct it before proceeding. Press the appropriate _____ keys until you have positioned the cursors directly underneath the error.

9. When you entered the field type code for the NAME field, the code AN identifies the NAME field as an _____ field.

10. The code J identifies the START.DATE field as a _____ _____ field.

11. When you have correctly created the format, definition, and data file for a data base, you are now ready to enter _____ into the data base.

POST TEST

SECOND PART

1. Given a Zenith 248 Personal Computer and CONDOR Data Base Management System Software, you will be able to build a data record containing the following fields: recruiter name, SS#, command, rate, and start date.

Steps to remember:

a. To create a format file type FORMAT Recruiter
b. Type field names and underscores
c. Save format files with CTRL and E keys
d. Enter field type code
e. Enter Recruiter to begin date entry screen
f. Save data base

APPENDIX G

CONCEPTUAL DESIGN FORM

Identification Data:

Lead Designer:

Name: JOHN COSBY

Specialty: Data Processing Technician

Title of Design:

Tutorial for CONDOR Data Base Management System

Module: Lessons of tutorial for CONDOR Data Base

Predesign:

Specify needs to be met: One of the specific objectives of the Naval Recruiting Command is for the learner to be able to demonstrate the ability to create data base records by utilizing CONDOR Data Base Management System. This course is designed to enable the learner to create the Format, Definition, and Data Files that the learner must demonstrate in building records, in order to form a data base.

The assignment is appropriate for several reasons:

First, a normative need exists for the learner to be able to demonstrate an understanding of creating a data base since this is a specific objective of the Tutorial. This course helps meet this need by having the learner run the tutorial at his or her own pace, which is necessary for the learner to demonstrate an understanding of the data base by formulating a program that identifies the steps necessary to develop a data base.

In addition, the content of the course is appropriate because a need exists for the instructional materials that informs the data processing technician of the steps necessary to creating a data base by developing the Format, Definition, and Data Files, and then entering data which establishes a single record, and given one or more records forms a data base. This indicates that this information will also be of use to the learner when he or she has the opportunity to apply data base skills acquired in an office environment.

Specify field, topic and target audience:

This instructional design will be used by learners who are currently in the Navy as Data Processing Technicians. This program introduces a series of lessons that guide the learner through using CONDOR. The lessons tell exactly what to do and how to do it in creating a data base. It does not treat everything one could know about CONDOR Data Base, but instead, the lessons are to provide basic experience and a starting point for learning a Data Base Management System.

An analysis of the target audience reveals that it is is composed of learners who are currently in the United States Navy and have two or more years remaining on their enlistment contract. In addition, data processing technicians will be recruited from the tri-state area, namely, New York, New Jersey and Connecticut. Within these areas, they must be assigned to a Naval Reserve Command.

Experience ranges from one to four years. This is because completion of the Data Processing technical school runs through the first year and most separate when their four year enlistment contract expires to enter the civilian job market for better wages.

Data processing technicians are in the rates of second and third class with experience in operating mainframes, flow charting data files and programs, design and creation of data files, ability to program in BASIC and COBOL languages, and so forth...

The majority of these learners state that they are interested in learning about CONDOR data base to further their careers; and when asked to indicate what they expect to "get" out of taking this program, they expressed it in many different ways, such as, "to learn as much about the CONDOR Data Base Management System as possible," "to learn how to run a data base," "to learn how to apply a data base for specific tasks at their command," and so forth...

Specify classes for which appropriate:

This program will be administered on an individual basis; whether self-paced or instructor lead, whichever is appropriate.

Number of students expected to be served:

This program will be used outside the classroom, individually. Initially, the program will be administered to approximately 15 to 20 data processing technicians, and then with incoming personnel.

Specify type of CAI: Course is designed to be a tutorial.

Specify goals: This course is designed to be used as an instructional unit which the learner, given a microcomputer and CONDOR Data Base Management system software, will be able to build a data base by formulating the Format, Definition and Data Files containing the following fields: recruiter's name, social security number, command, rate and start date. The learner will be able to create a record of a data base in 45 minutes with a level of competency at 100 percent.

Specify microcomputer to be used for implementation, including necessary specifics regarding configuration: This program is designed to be implemented on an IBM PC compatible microcomputer.

Specify major instructional objectives: The specific major objectives of this course are as follows:

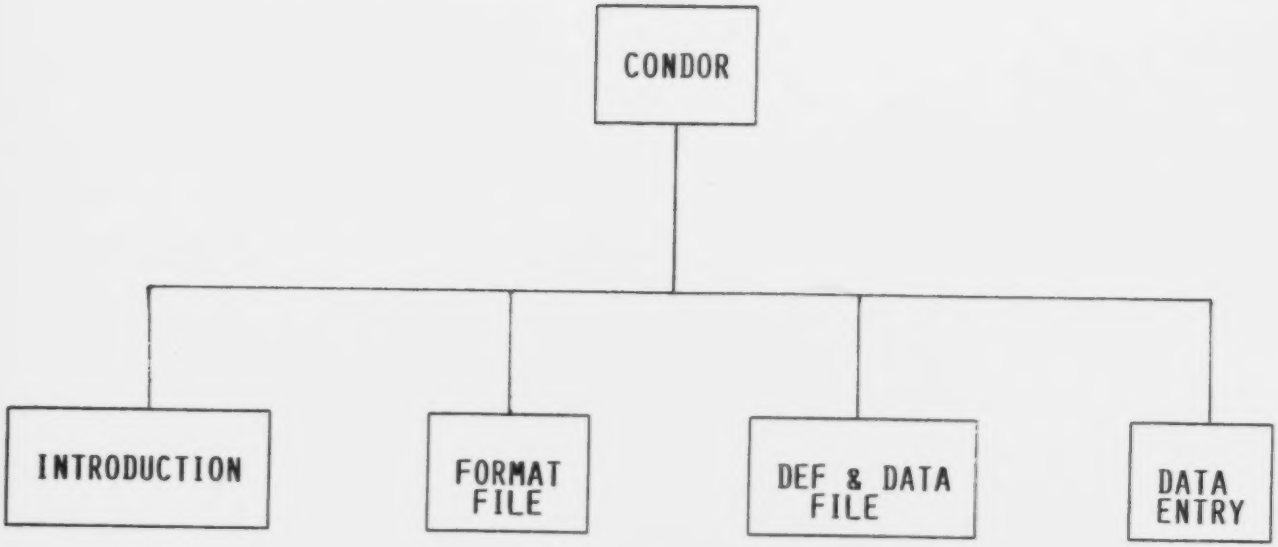
Given an IBM PC compatible microcomputer with keyboard and two floppy disks, McGraw Hill's authoring system disk and lesson disk, the learner will be able to:

1. incorporate all the steps presented by the course in his or her program to creating a record, thus forming a data base.
2. incorporate the step-by-step presented by the course in his or her program in sequence, in order to create a data base.
3. formulate the Format File of a data base, and incorporate it with the following fields: recruiter's name, social security number, command, rate and start date.

APPENDIX H

LESSON FLOWCHART

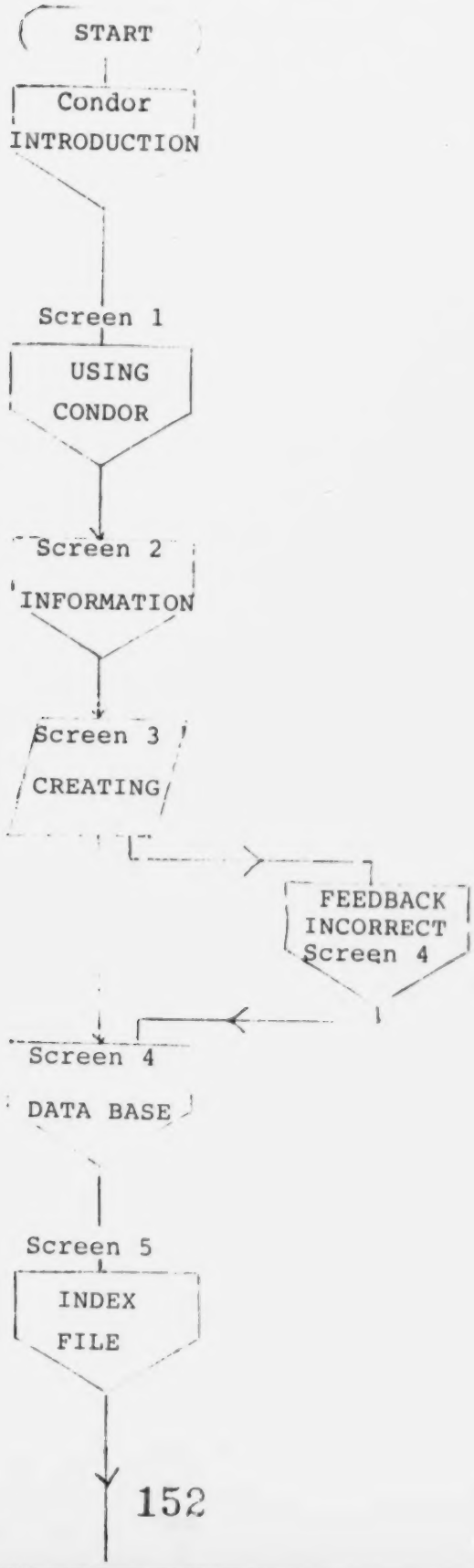
LESSON FLOWCHART

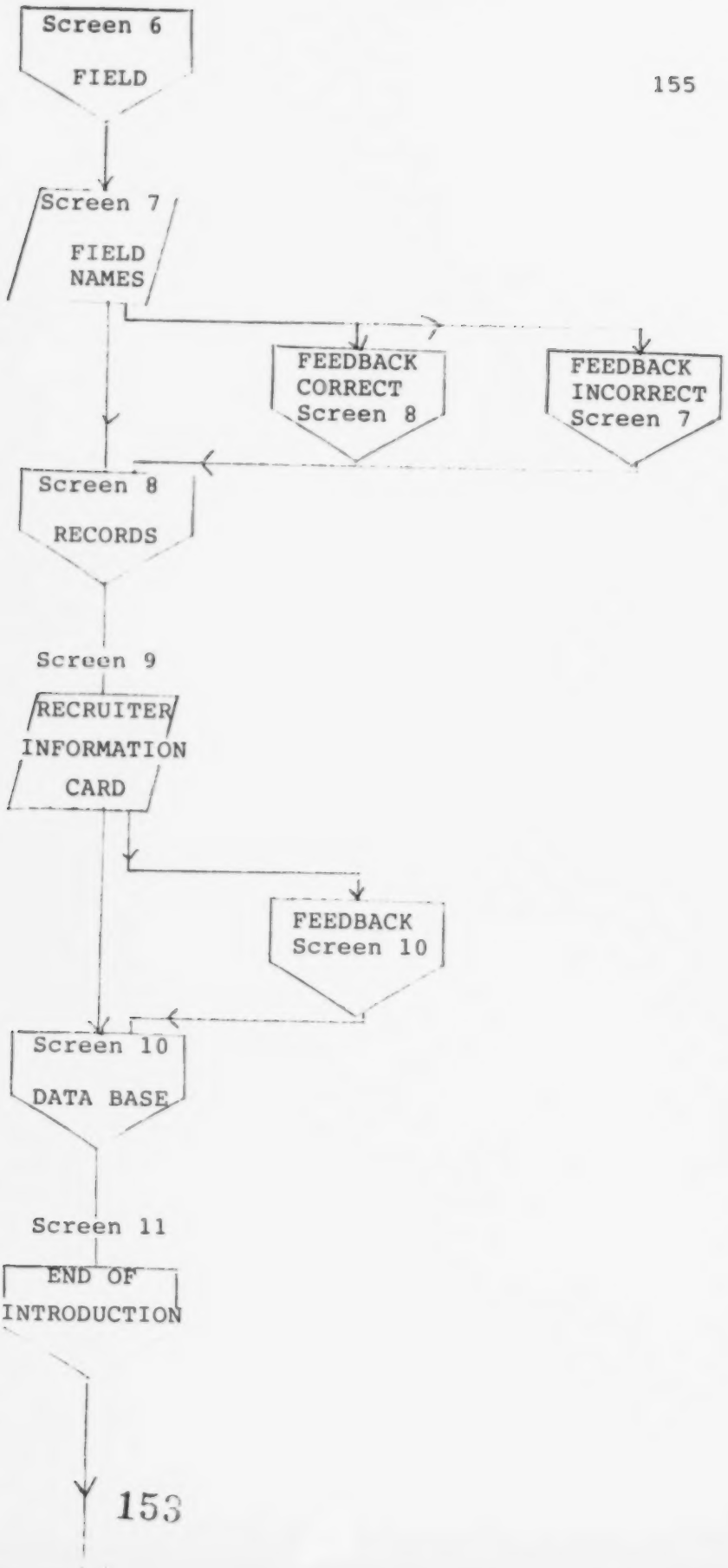


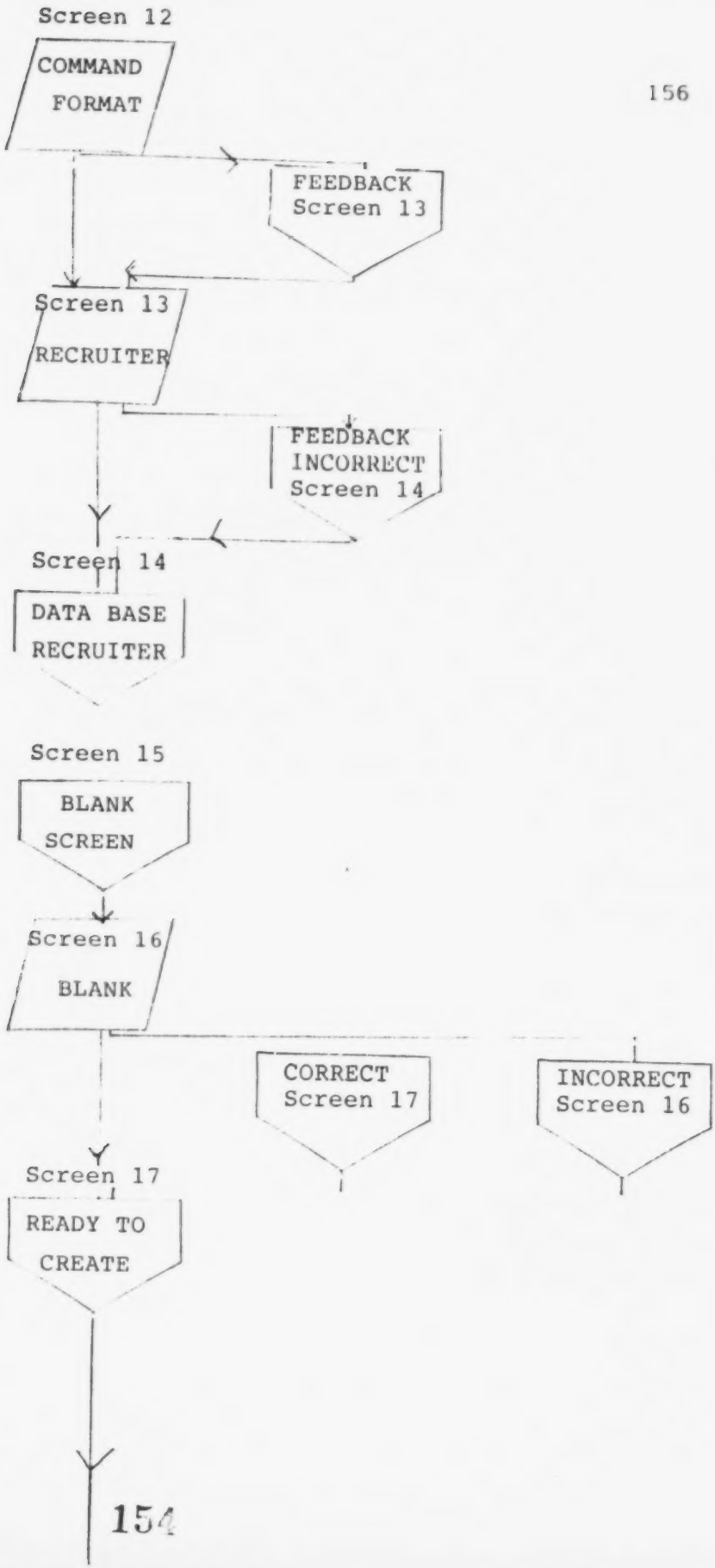
APPENDIX I

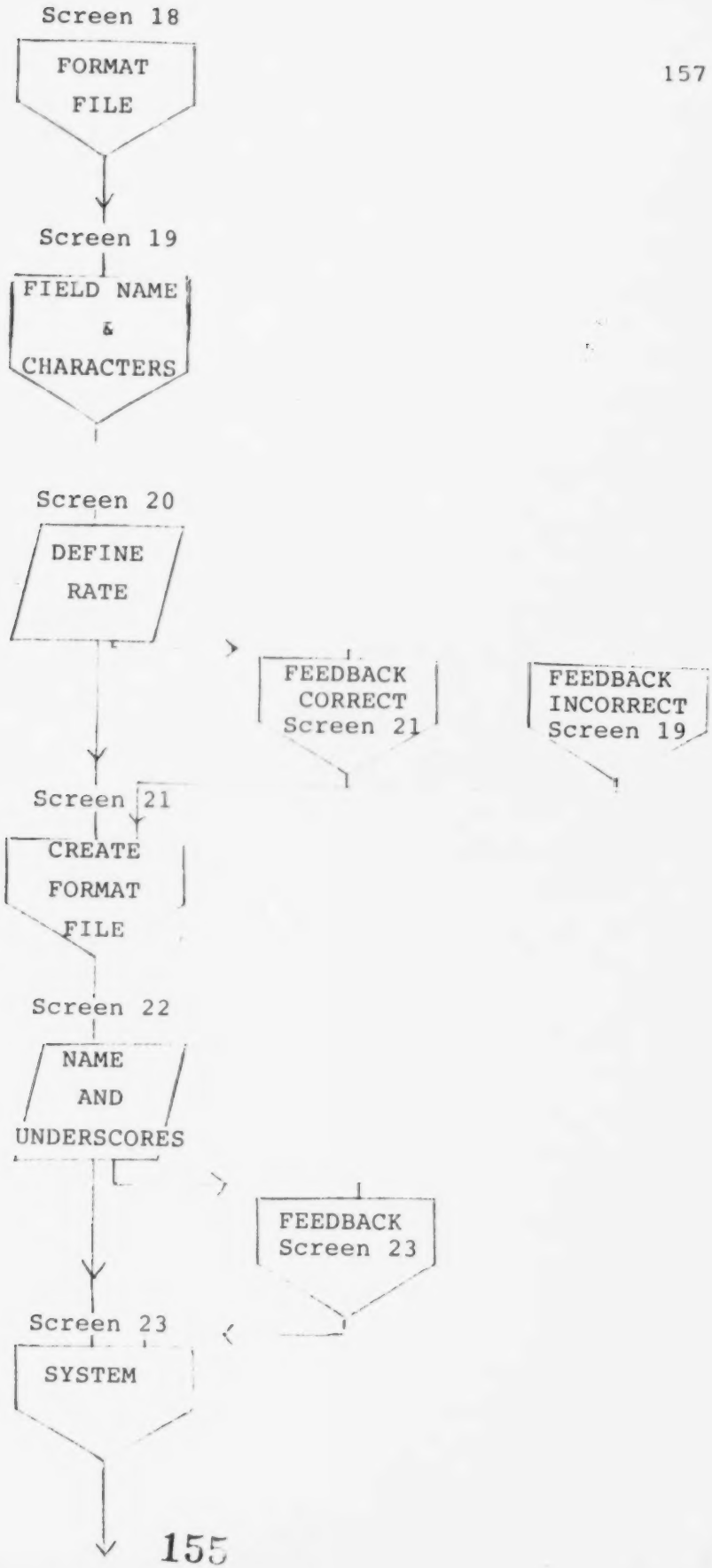
SCREEN SEQUENCE FLOWCHART

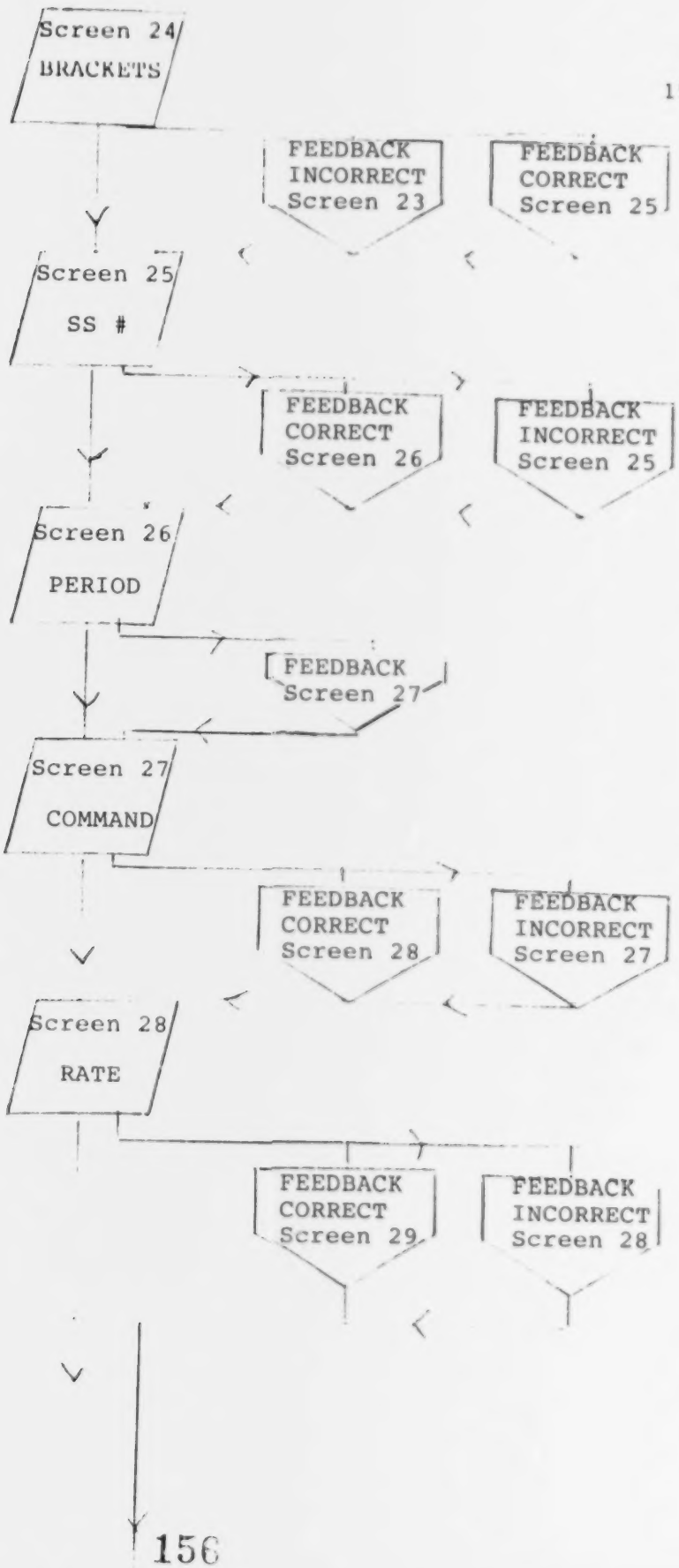
SCREEN SEQUENCE FLOWCHART

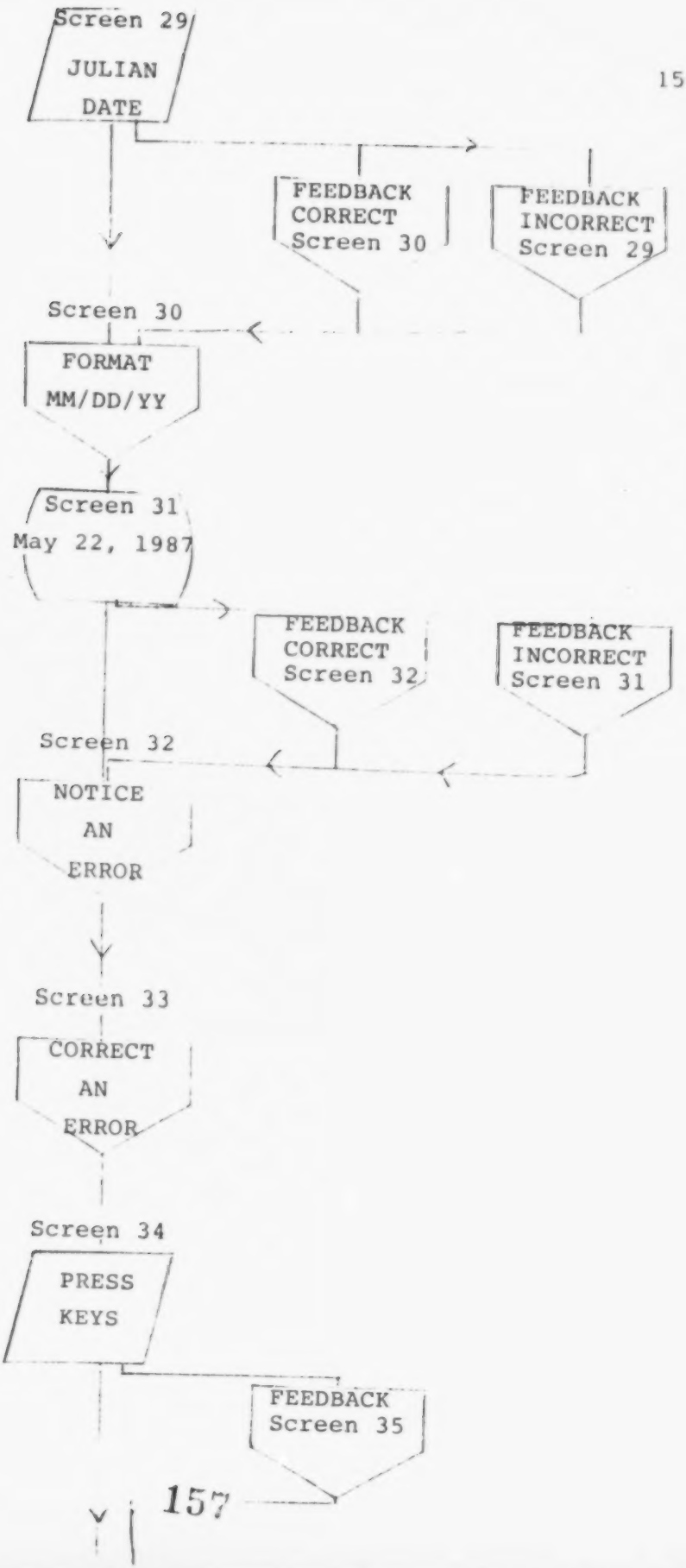


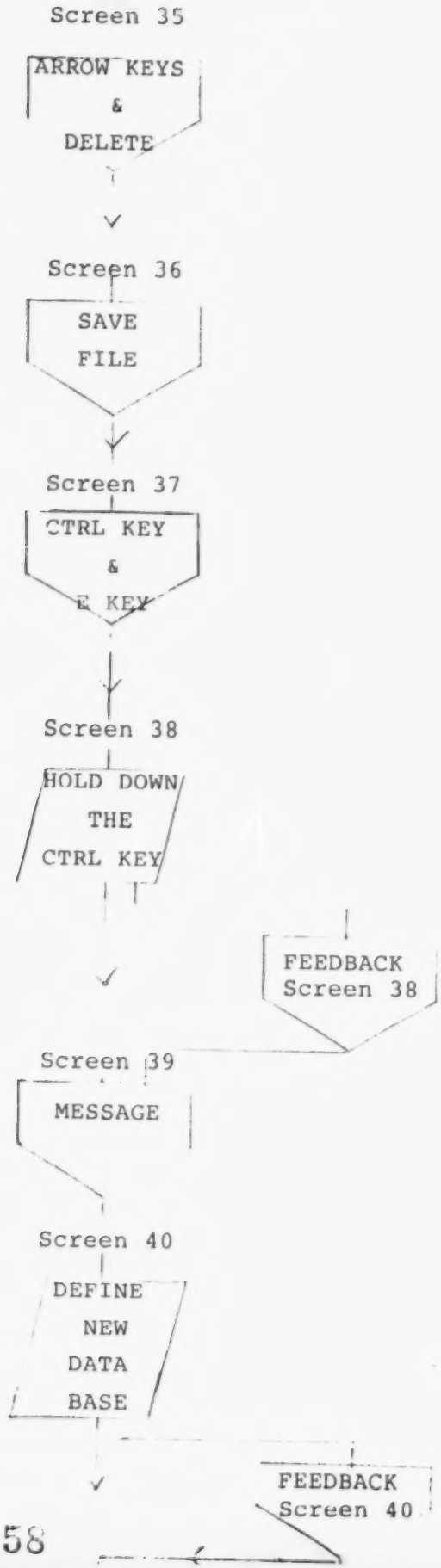

Screen 6
FIELD
Screen 7
FIELD
NAMES
FEEDBACK
CORRECT
Screen 8
FEEDBACK
INCORRECT
Screen 7
Screen 8
RECORDS
Screen 9
RECRUITER
INFORMATION
CARD
FEEDBACK
Screen 10
Screen 10
DATA BASE
Screen 11
END OF
INTRODUCTION

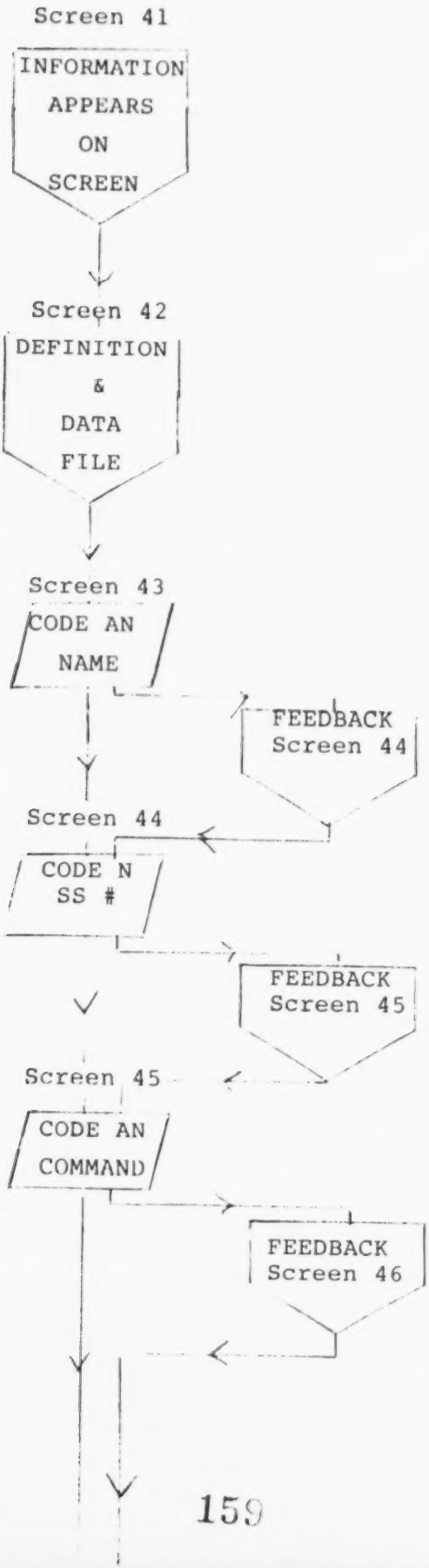

Screen 12
COMMAND FORMAT
FEEDBACK Screen 13
Screen 13
RECRUITER
FEEDBACK INCORRECT Screen 14
Screen 14
DATA BASE RECRUITER
Screen 15
BLANK SCREEN
Screen 16
BLANK
CORRECT Screen 17
INCORRECT Screen 16
Screen 17
READY TO CREATE

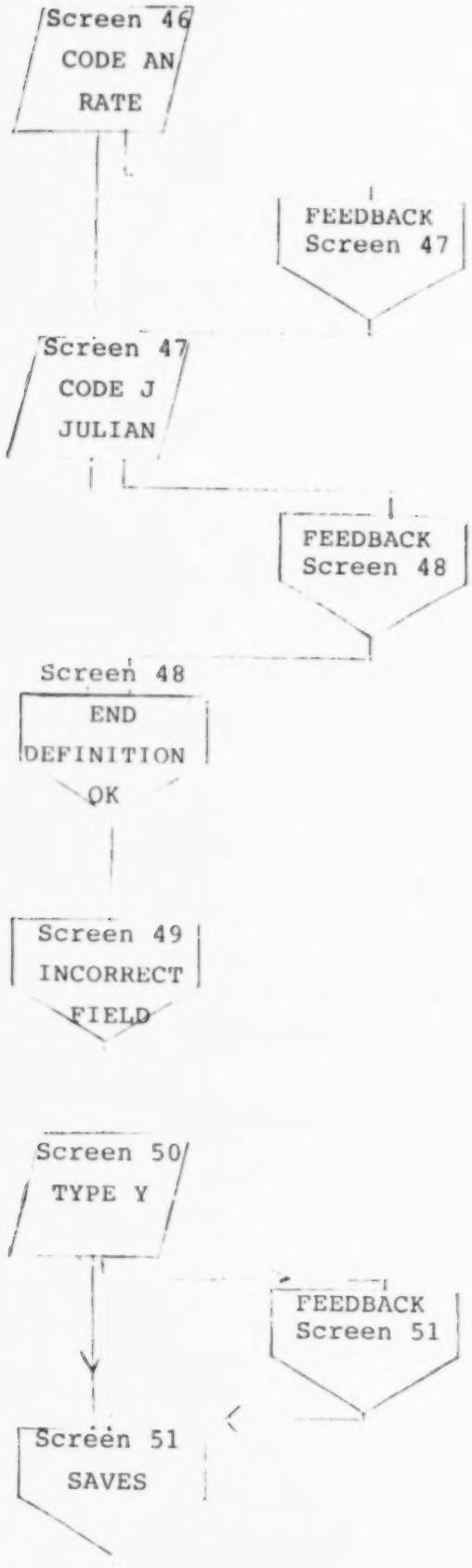

Screen 18
FORMAT FILE
Screen 19
FIELD NAME & CHARACTERS
Screen 20
DEFINE RATE
FEEDBACK CORRECT Screen 21
FEEDBACK INCORRECT Screen 19
Screen 21
CREATE FORMAT FILE
Screen 22
NAME AND UNDERSCORES
FEEDBACK Screen 23
Screen 23
SYSTEM

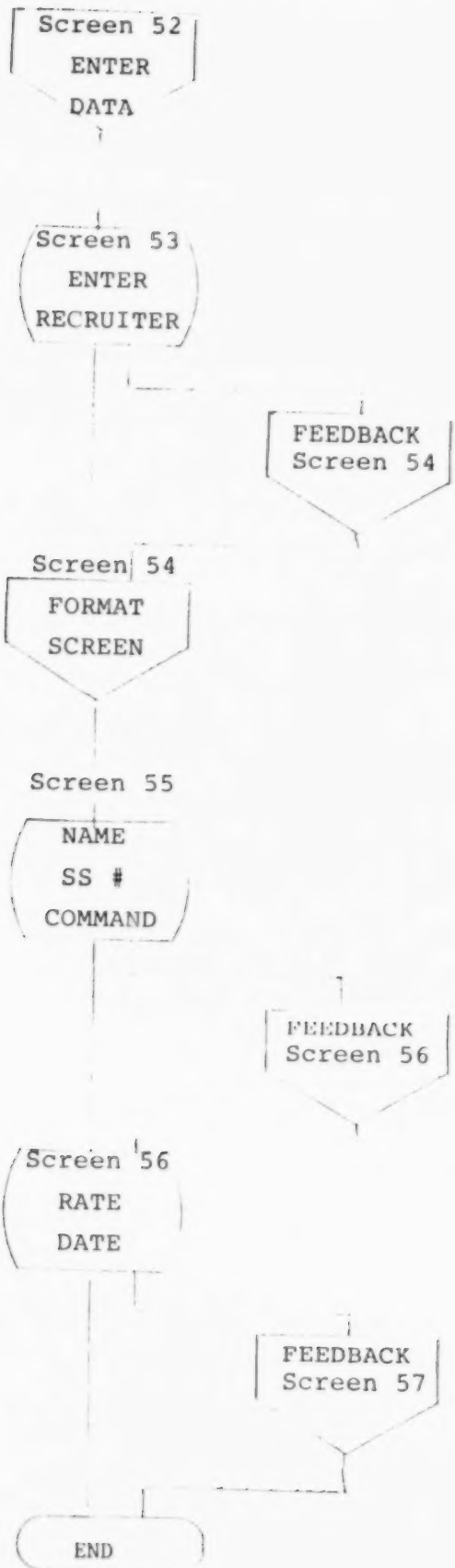

Screen 24
BRACKETS
FEEDBACK
INCORRECT
Screen 23
FEEDBACK
CORRECT
Screen 25
Screen 25
SS #
FEEDBACK
CORRECT
Screen 26
FEEDBACK
INCORRECT
Screen 25
Screen 26
PERIOD
FEEDBACK
Screen 27
Screen 27
COMMAND
FEEDBACK
CORRECT
Screen 28
FEEDBACK
INCORRECT
Screen 27
Screen 28
RATE
FEEDBACK
CORRECT
Screen 29
FEEDBACK
INCORRECT
Screen 28


Screen 29
JULIAN
DATE
FEEDBACK
CORRECT
Screen 30
FEEDBACK
INCORRECT
Screen 29
Screen 30
FORMAT
MM/DD/YY
Screen 31
May 22, 1987
FEEDBACK
CORRECT
Screen 32
FEEDBACK
INCORRECT
Screen 31
Screen 32
NOTICE
AN
ERROR
Screen 33
CORRECT
AN
ERROR
Screen 34
PRESS
KEYS
FEEDBACK
Screen 35


Screen 35
ARROW KEYS
&
DELETE
Screen 36
SAVE
FILE
Screen 37
CTRL KEY
&
E KEY
Screen 38
HOLD DOWN
THE
CTRL KEY
FEEDBACK
Screen 38
Screen 39
MESSAGE
Screen 40
DEFINE
NEW
DATA
BASE
FEEDBACK
Screen 40


Screen 41
INFORMATION APPEARS ON SCREEN
Screen 42
DEFINITION & DATA FILE
Screen 43
CODE AN NAME
FEEDBACK Screen 44
Screen 44
CODE N SS #
FEEDBACK Screen 45
Screen 45
CODE AN COMMAND
FEEDBACK Screen 46


Screen 46
CODE AN
RATE
FEEDBACK
Screen 47
Screen 47
CODE J
JULIAN
FEEDBACK
Screen 48
Screen 48
END
DEFINITION
OK
Screen 49
INCORRECT
FIELD
Screen 50
TYPE Y
FEEDBACK
Screen 51
Screen 51
SAVES


Screen 52
ENTER
DATA
Screen 53
ENTER
RECRUITER
FEEDBACK
Screen 54
Screen 54
FORMAT
SCREEN
Screen 55
NAME
SS #
COMMAND
FEEDBACK
Screen 56
Screen 56
RATE
DATE
FEEDBACK
Screen 57
END

APPENDIX J

WRITING SCRIPTBOARD

Although story boards were designed and developed for each screen display for this project, the designer will submit only five story boards for illustration.

166

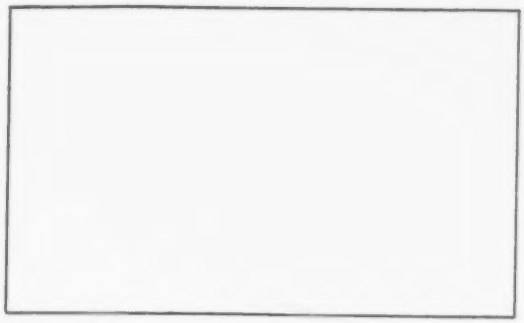
32.

[NAME]: _ _ _ _ _ _ _ _ _ _ _ _ _ _
[SS#]: _ _ _ _ _ _ _ _ _ _ _ _ _ _
[COMMAND]: _ _ _ _ _ _ _ _ _ _ _ _
[RATE]: _ _ _ _ _ _ _ _ _ _ _ _ _
[START DATE]: _ _ _ _ _ _ _ _

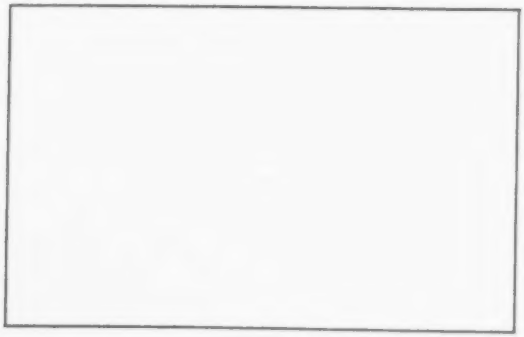
LET'S SUPPOSE YOU NOTICED AN ERROR ON THE SCREEN AFTER YOU TYPED IN THE LAST FIELD NAME....[START DATE]: TURN TO THE NEXT PAGE.

33. TO CORRECT AN ERROR ON THE SCREEN, PRESS THE APPROPRIATE ARROW KEYS (↑,↓,←,→) UNTIL YOU HAVE POSITIONED THE CURSOR DIRECTLY UNDERNEATH THE ERROR. THEN USE THE DELETE KEY AND RETYPE THE INFORMATION.

167



34. TO CORRECT AN ERROR ON THE SCREEN, PRESS THE _____ AND THE DELETE KEY.



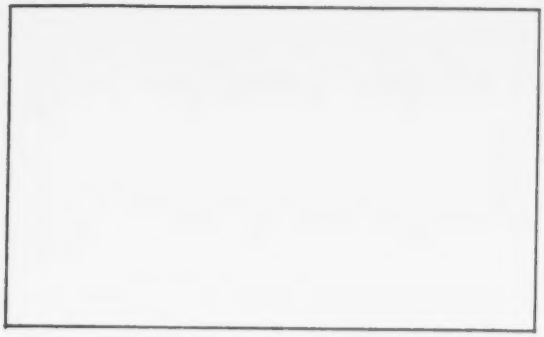
35. ARROW KEYS

AND

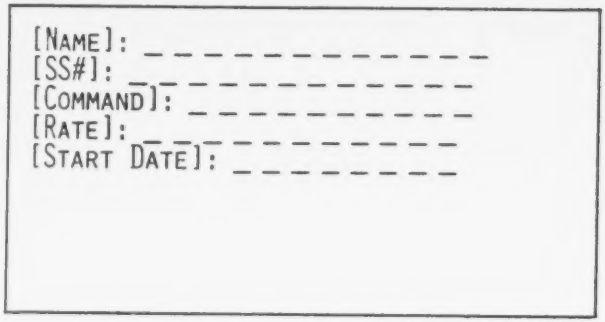
DELETE KEYS

THEN RETYPE THE INFORMATION.

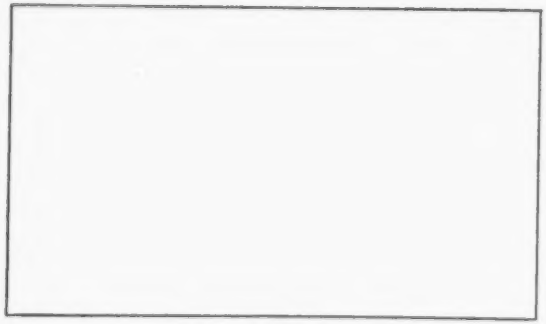
168



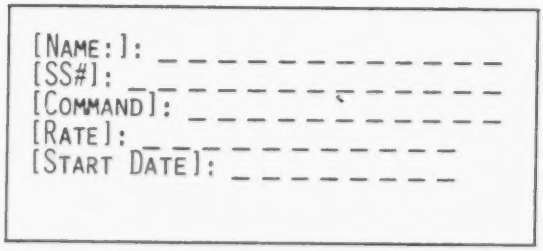
36.



NOW THAT YOU HAVE CHECKED THE SCREEN FOR ACCURACY, YOU WISH TO SAVE THE FORMAT FILE. THIS CAN BE DONE BY ....

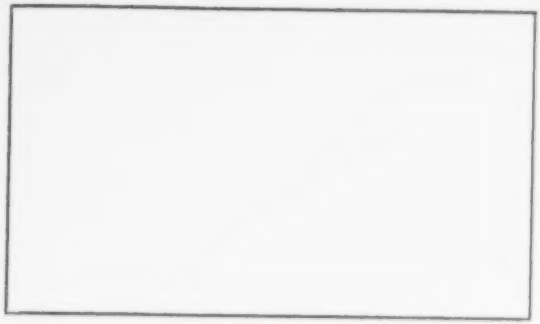


37.

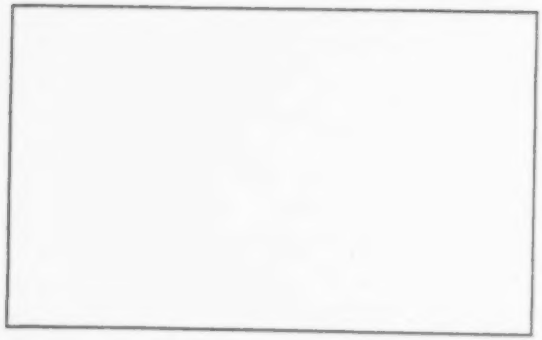


WHILE HOLDING DOWN THE CTRL KEY, PRESS THE E KEY. THIS TELLS THE SYSTEM TO SAVE THE RECRUITER FORMAT FILE THAT YOU HAVE CREATED.

169



38. TO SAVE THE RECRUITER FORMAT FILE THAT YOU HAVE CREATED ... YOU NEED TO HOLD DOWN THE CTRL KEY AND PRESS THE _____ KEY.

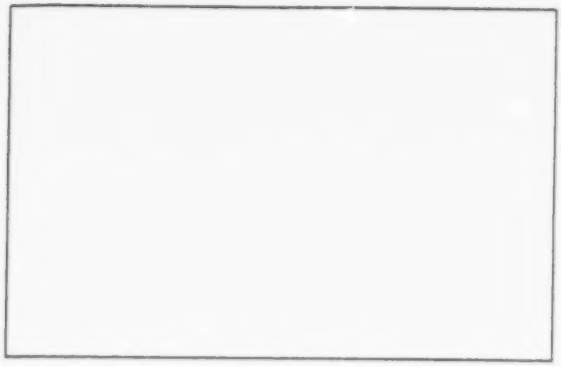


39.

```
[NAME]:  _ _ _ _ _ _ _ _ _ _ _ _
[SS#]:   _ _ _ _ _ _ _ _ _ _ _ _
[COMMAND]: _ _ _ _ _ _ _ _ _ _ _
[RATE]:  _ _ _ _ _
[START DATE]: _ _ _ _ _ _ _ _
DO YOU WISH TO DEFINE A NEW DATA
BASE USING THIS FORMAT Y/N?
```

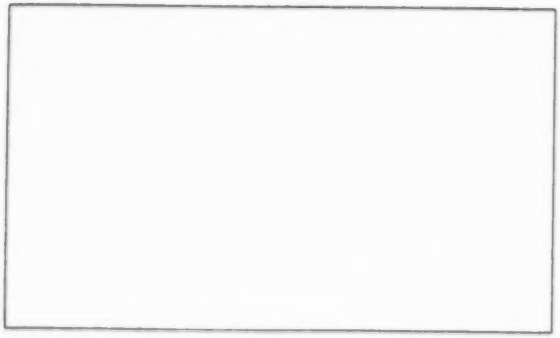
AFTER HOLDING THE CTRL KEY AND PRESSING THE E KEY, THE FOLLOWING MESSAGE APPEARS AT THE BOTTOM OF THE SCREEN.

170



40. DO YOU WISH TO DEFINE A NEW DATA BASE USING THIS FORMAT (Y/N)?

TYPE ____
(Y)



41.

```
> 1. NAME:
> 2. SS#:
> 3. COMMAND:
> 4. RATE:
> 5. START DATE:
```

AT WHICH THE ABOVE INFORMATION APPEARS ON THE SCREEN.

APPENDIX K

EVALUATION CHECKLIST QUESTIONNAIRE

LESSON EVALUATION CHECKLIST

CONTENT GUIDELINES

		Yes	No	Remarks
1. Reading and comprehension level is appropriate.	*	✓		Stressed main points Easily followed
2. Writing style and tone are appropriate.		✓		Plain English Simple to follow
3. Lesson content is accurate.		✓		Clear, a little confusing.
4. Lesson material is concise		✓		Segment #2, appropriate, too concise, very much so.
5. Grammar, punctuation, and spelling are correct.		✓		
6. The lesson contains material only relevant to objectives established.		✓		Meaning was clear

ORGANIZATION AND BRANCHING STRUCTURE GUIDELINES

1. Lesson structure is clear and well-organized.		✓		Very much so, always clear, deliberate, development of technique.
2. Lesson design is consistent throughout the lesson or series lessons.		✓		
3. Learners know when the lesson is over.		✓		Told so, definitely, and how they did.
4. The learner has control over lesson material.		✓		

INTERACTION GUIDELINES

1. Interaction is appropriate.		✓		Sometimes, to an extent.
2. Interaction is meaningful.		✓		Stressed technique
3. All necessary instruction and feedback are provided - learner does not have to look or ask for them.		✓		Answers all right or wrong, user always knows, very clear, easy to follow.
4. Learners control the pace interaction.		✓		

LESSON EVALUATION CHECKLIST

DIRECTNESS, PROMPTS, AND MESSAGES GUIDELINES

	Yes	No	Remarks
1. Directions are stated simply and clearly.	✓		
2. Directions are friendly.	✓		User friendly
3. Directions do not use computer terminology. They are conversational in tone.	✓		Some terminology may be appropriate
4. Instruction is provided whenever a direct action is required.	✓		

BASIC PRESENTATION GUIDELINES

1. Contrasting foreground and background colors are used to display text.	✓		Evenly matched
2. All lessons display screens are visually balanced.	✓		Liked the colors
3. Forty column width is used consistently.	✓		Always centered
4. Each lesson display screen contains no more than one important idea or concept.	✓		A synopsis may be helpful

* (✓) Denotes a positive response in all six subject areas.

APPENDIX L

QUESTIONNAIRE

QUESTIONNAIRE

Name (L, F, M.): _____
Position Title: _____
Duty Address: _____
_____

1. Circle last level of education: 9 10 11 12 13 14 15 other

2. How would you rate your reading comprehension?
   not good 1 2 3 4 5 6 7 8 9 10 good (circle one)

3. How would you rate your math ability?
   not good 1 2 3 4 5 6 7 8 9 10 good (circle one)

4. How long have you been in the Naval Reserves?
   __ 1-2 yrs. __ 3-4 yrs. __ 5-6 yrs. __ 7-8 yrs. __ longer

5. Are you currently in the rate of Data Processing Technician?
   __ Yes __ No
   If so, how long have you been in the position? _____

6. Did you attend "A" school to becoming a Data Processing Technician?
   __ Yes __ No

7. How long do you think you can sit at a computer station entering data?
   ___ hours ___ mins.

8. What type of computer(s) have you worked on? _____
   _____.

9. Check off the following list that you have had experience with .....
   ___ set up a hardware system
   ___ programmed in one or more languages
   ___ operated a personal computer
   ___ worked with a data base software

10. Do you own a personal computer? ___ Yes ___ No
    If so, what model _____

11. Have you ever created a file? ___ Yes ___No
    If so, explain _____

12. Briefly describe your experience as a Data Processing Technician with the Naval Reserves. _____
    _____
    _____.

13. Have you operated a Zenith Personal Computer before? ___ Yes ___ No
    If so, circle model type: 120 161 248 other

14. Have you worked with CONDOR Data Base Management System Software before? ___ Yes ___ No

15. Have you worked with another Data Base Management System Software before? ___ Yes ___ No

16. Do you know how to create a record for a data base? ___ Yes ___ No

APPENDIX M

DETAIL SCREEN

Although detail screens were designed and developed for each screen display for this project, the designer will submit only five detail screens for illustration.

APPENDIX VI

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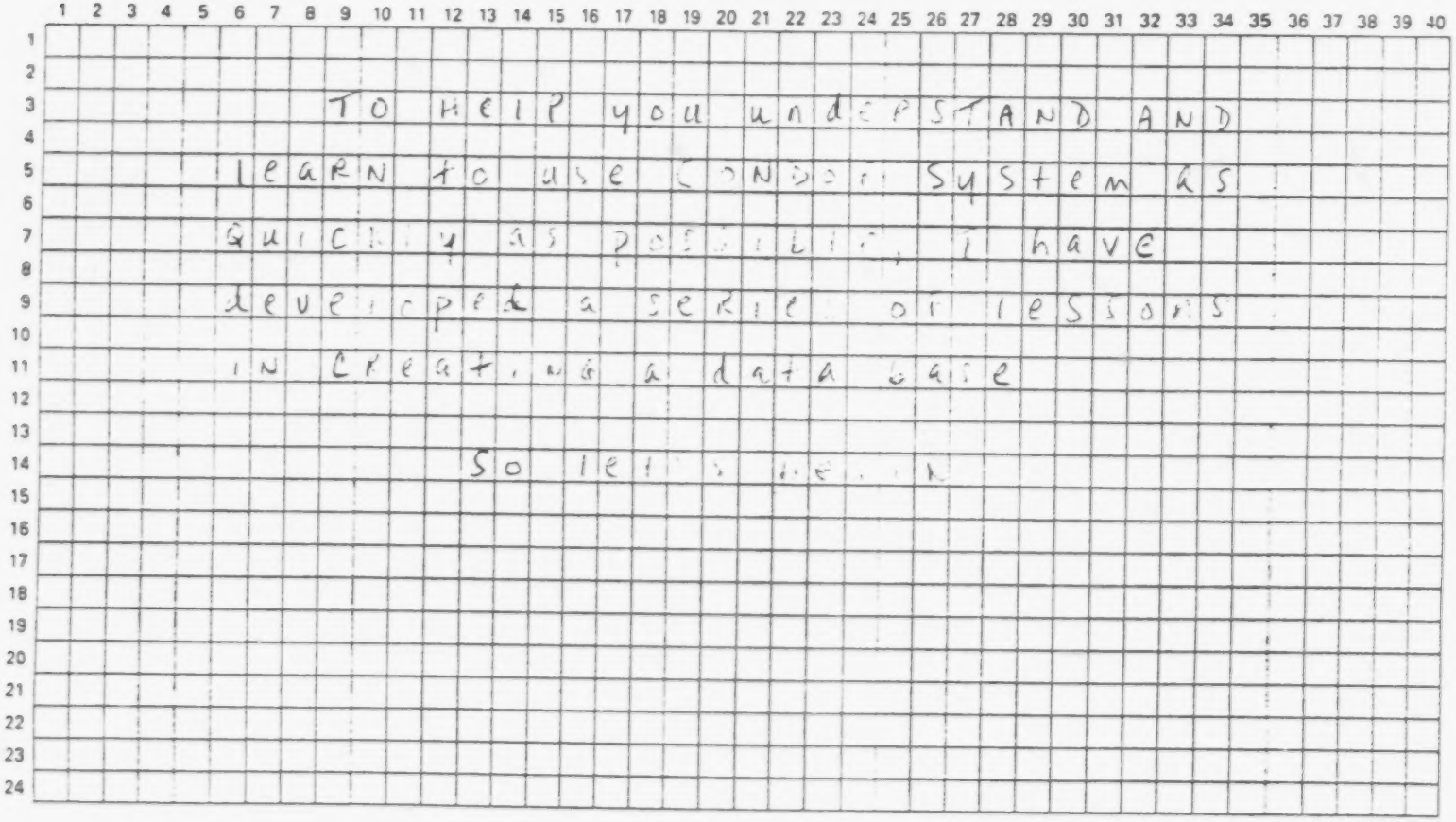
Screen Name CONDOR Section 1 Screen Type Presentation Lesson [illegible]

☐ Include in Reporting Border Color Blue Display Speed Fast Format Full

Answers Evaluated N/A

Branching N/A


TO HELP you understand and
learn to use CONDOR system as
quickly as possible, I have
developed a series of lessons
in creating a data base
So let's begin.

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Screen Name SCREEN 1 Section 1 Screen Type PRESENTATION Lesson INTRODUCTION

☐ Include in Reporting Border Color BLUE Display Speed PAGE Format FULL

180

Answers Evaluated N/A

Branching N/A

```
IMAGINE THAT YOU HAVE BEEN
SELECTED CAPTAIN OF A SMALL
RECRUITING COMMAND. ASSIGNED
TO YOU ARE RECRUITERS TO COMPLETE
THE MISSION YOU WOULD LIKE TO
CREATE A DATA BASE USING CONDOR
THAT WILL HELP TO KEEP TRACK
OF CERTAIN RECRUITERS INFORM-
ATION
```

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Screen Name Screen 2 Section 1 Screen Type Presentation Lesson Introduction

☐ Include in Reporting Border Color Blue Display Speed Page Format Full

Answers Evaluated N/A

Branching N/A

THIS INFORMATION NEEDS TO BE
BOTH KEPT CURRENT AND ACCESSED
AS EASILY AS POSSIBLE THE
INFORMATION TO BE STORED IN THE
DATA BASE ARE NAME, RACE, SOCIAL
SECURITY NUMBER, COMMAND AND
START DATE.

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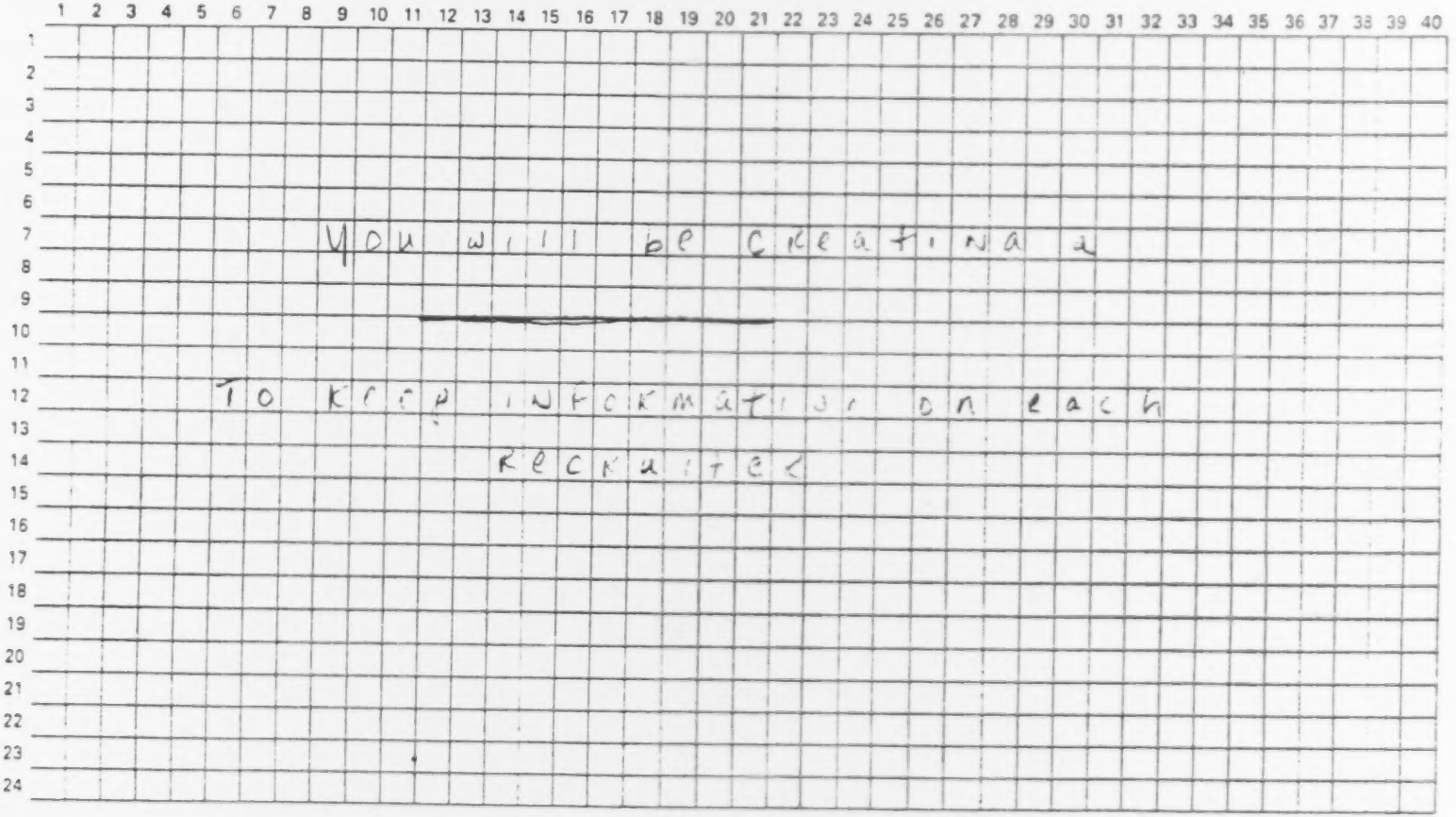
Screen Name Screen 3 Section 1 Screen Type Fill in blank Lesson Introduction

☑ Include in Reporting Border Color Blue Display Speed Fast Format Full

Answers Evaluated data base

Branching to screen 4



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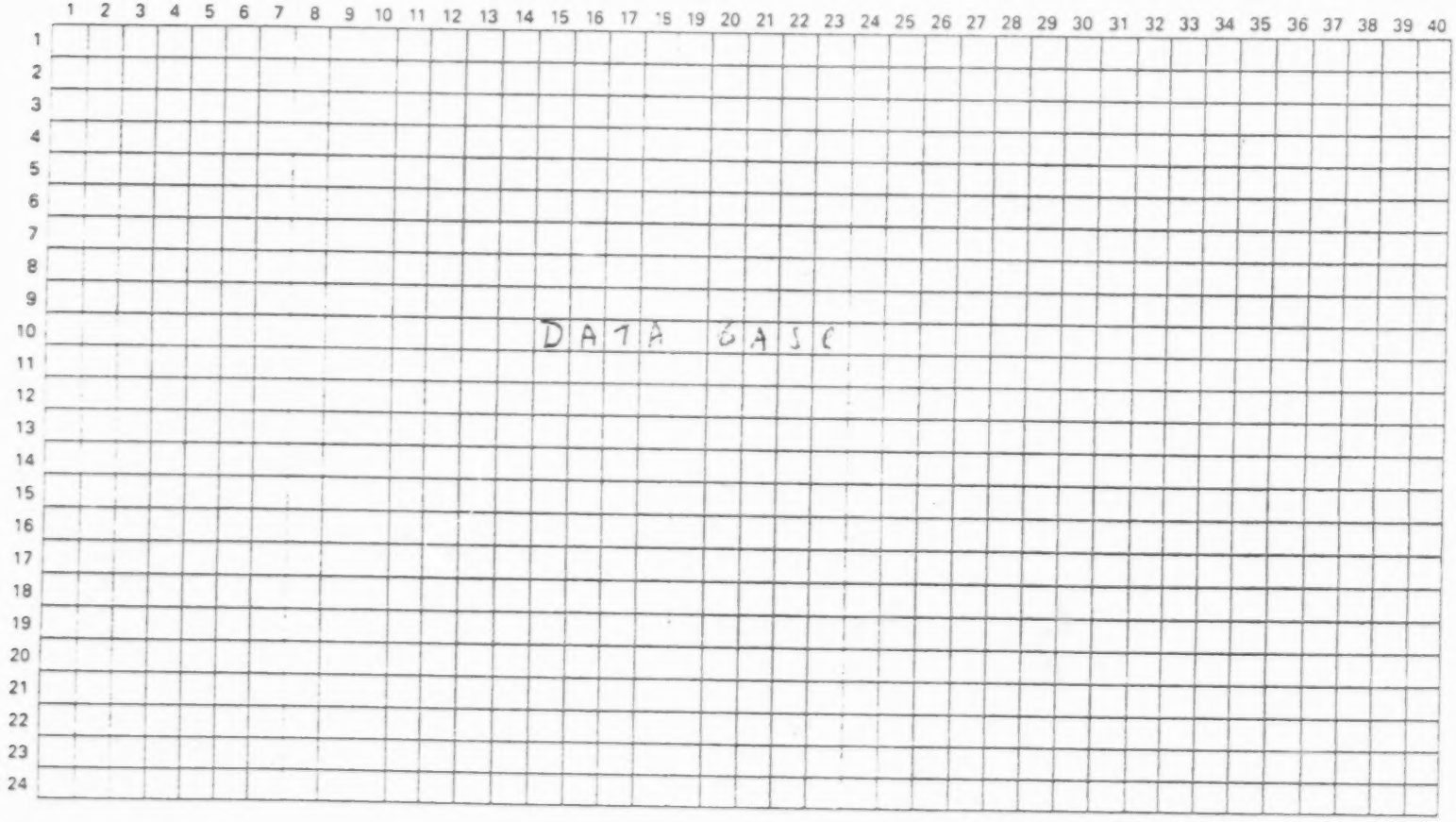
Screen Name Screen 4 Section 1 Screen Type Presentation Lesson Introduction

☐ Include in Reporting Border Color Blue Display Speed FAST Format Full

Answers Evaluated N/A

Branching NEXT



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APPENDIX N

PRINT SCREEN

Although print screens were designed and developed for each screen display for this project, the designer will submit only the following print screens for illustration.

4. implement the necessary code for the definition and data files of the data base.
5. key in the correct responses to Fill-in-Blank and application/simulation practice questions that are displayed on the screen by keying in the exact answer.

The course will be considered successful if 100 percent of the learners completing the course meet the major objectives of the course.

Define levels of educational material sequence, number of questions, and provide one illustration for each level, in sequence: In developing this course, levels of educational materials will be designed that require the learner to demonstrate knowledge, comprehension, and application of the data base information presented.

The content will be presented to the learner through text on the screen, using illustrations where appropriate. Mastery of the data base step-by-step information will be evaluated by asking practice questions that determine whether or not the learner can recall the content that has been presented. This course will give the learner other practice questions that require the learner to be able to interpret the content that has been presented to answer the question correctly. The number of practice questions will vary from lesson to lesson within the course, but will range from three to nine questions per lesson. This course will be comprised of no more than four lessons that include questions:

A. Introduction
B. Format
C. Definition and Data
D. Data Entry

The following examples are illustrations of one question per each instructional level presented in the course:

Example-Knowledge: Primary objective of the Introduction lesson is to identify the basic factors that make up a data base.

Example-Comprehension: To provide knowledge of the step-by-step procedures necessary in formulating the Format File.

Example-Application: After creating a data base record format, incorporate the data entry lesson by entering simulation responses similar to a real data base entry.

The sequence of the instruction presented will incorporate the tutorial strategy which presents new information and provides for testing on the information. Testing can occur scattered throughout the content, after major sections, or at the end of a lesson. The major learning events of the tutorial strategy are: (1) present information, (2) ask questions or present a problem, (3) judge responses and provide feedback, and (4) next sequence.

Discuss use you intend to make of hint and help message, giving two hints in sequential order as you plan to use them.

Help sequences would be accessible to the learner from the main idea segments. These help screens would give additional information to the

learner, restate information already presented for the learner, or direct the learner back to the appropriate lesson in the course so that the learner can study the information that relates to the practice again.

Example: When the learner needed help mastering information to answer the application level in applying the appropriate three responses: name, social security number and command, the help screen (in the screen section) would display hints to filling out the appropriate responses. If the learner correctly responded to two of the three answers, the hint screen would direct the learner to the appropriate screen in the course to restate the information.

Specify format and any use of this format through assessment/placement:

This program will allow for branching controlled by the learner. Branching format will be mostly linear with limited branches. The linear branching will allow only one path through the instructional path, such as the introduction level. All learners will receive the same information which provides testing in the same way. The branched tutorial will provide several pathways through the same material, depending on learner response, such as the simulation screens.

Specify types of reinforcement and schedules of reinforcement prior to and following achievement of mastery: Although this program will provide self-reinforcement for the learners by guiding them to discover the correct answer, the program disk will not be used to provide reinforcement in the sense of rewards, such as a game sequence.

Positive reinforcement will be provided in the form of the word "Correct" displayed on the screen and forwarding to the next screen. If an inappropriate response has been made, the learner will be branched to a screen containing the restated information necessary to give the appropriate response to the practice question.

Specify intended use of artificial intelligence:

No use of artificial intelligence is planned.

Identify specific number of items to be correctly answered in order to achieve mastery at each different level of difficulty as well as overall.

This program will not contain varying degrees of difficulty in the sense that the learner can select more challenging material in each lesson (module); however, some variation in the reading levels of text screens may be used. This is appropriate because not all learners have comparable reading skills; therefore, main idea help screen, if available within the lesson, will provide information using as simple as possible vocabulary and sentence structure.

The specific number of items to be answered in order to achieve mastery of the instructional objectives is 100 percent accuracy.

Discuss use of record keeping: Record keeping within the instructional sequences of the program will consist of recording the scores a learner achieves on correct/incorrect responses to the questions within each module, (lessons). Feedback on learner performance will be supplied to the learner when each question is completed.

Provide general outline of overall approach, theme, or scenario.

The course will be comprised of four lessons on disk, documented with storyboards, detailed screen layout sheets, program flow charts, and a conceptual design.

The introduction will present initial operating screen procedures, gain the learner's attention by using a text display of variable colors and graphics, interaction between learner and program, and inform the learner of the objectives of the course.

Each lesson will gain the learner's attention for presenting the objective of that lesson as texts scroll up and stay stationary until the learner responds to those screens with questions, in order to access the next screen. Recall of prior learning will be stimulated with appropriate test and/or graphics. Stimuli displayed on the screen will be in a consistent format. For example, CONDOR data base screens displayed within the actual computer hardware screen will illustrate the fields, in order of recruiter's name, social security number, command, rate and start date. To help guide learning an illustration, with a concrete example and related to some prior knowledge, will be presented to the learner. The learner will be asked to perform by responding to practice questions within each lesson. Feedback will be provided to the learner on his or her performance in the form of positive written screen information of the appropriateness of the answer. In the event of an inappropriate answer, a screen restating information necessary to answer practice question will be designed to prompt the learner to give the appropriate response.

The performance of the learner in mastering all the data base tutorial information presented in the lessons of the course will be accessed through Fill-in-Blank and application/simulations questions.

The learner will be advised if his or her performance has been satisfactory. The feedback learners receive on their individual reports and instructor/learner discussions about the program proposed in the formal report will, hopefully, enhance learning retention.

Specify overall use of instructions in the program and student documentation. Provide example of anticipated instructions to students at beginning of program.

Instructions will be displayed using a consistent format, typed at bottom of screen and stated clearly in a conversational, friendly manner. For example, the program will display the prompt "Press Space Bar to Continue," and/or "Correct," at the bottom of the screen in the same size and color text throughout the program.

Specify special types of reinforcement you plan to use.

The program proposed self-reinforcement for responding to practice questions appropriate for positive reinforcement in the form of written statement, such as "CORRECT," on the screen, and negative reinforcement in the form of written statement, such as "INCORRECT," at the bottom of the screen when the learner performance is inappropriate to the question, and subsequently branched to prior restated information. Also, reinforcement will be provided in the form of instructor/learner discussions on completion of the program.

Feedback will be designed in a way that minimizes the possibility of self-esteem damage. Feedback for appropriate responses will not be worded to imply that the learner should have been able to come up with the correct response. Rather to imply that perhaps the additional information should have been presented to the learner initially, or that many learners need additional information before they can master the data base tutorial information.

An approach utilized several times in the lessons is to have the learner respond to a question within the screen and regardless of his or her performance (correct/incorrect), branching to the next screen is integrated. Firstly, this is done to imply to the learner that if his or her response is appropriate, new information is given with the next screen. Secondly, if his or her response is inappropriate, the next screen with reinforcing information is displayed, with the intention to minimize the possibility of self-esteem damage.

Specify key uses to be made of graphics: Some graphics will be created to gain the learner's attention, to make lessons visually interesting, and to clarify the content being presented. Only partial screen graphics of less than one-half screen will be included.

Specify key uses to be made of color: Color will be used to make the content visually interesting to the learner. The initial screen will be white with black elements.

Specify the key uses to make of sound. Provide an illustration: No use of sound is planned.

Specify following:

1. **Materials are to replace or supplement instruction:**

   Supplement instruction

2. **Material used inside or outside of classroom:**

   Equipment will be used at learner's work station

3-4. How many minutes students should spend on materials at each session and how should sessions be spaced: The course is designed for independent use by individual learners. The course will be designed so that it can be worked through in one session of no longer than 45 minutes. Although each session is a complete unit of instruction, learner will be encouraged to complete the lessons in one session.

How many total sessions should be devoted to use: Ideally, one 45 minute session should be devoted to the use of the course developed, CONDOR Tutorial Data Base.

Discuss design evaluation: This program design will be evaluated through use of record keeping, instructor/learner discussions, and production of instructional materials.

4. SCREEN NAME: SCREEN3

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

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You will be creating a

- - - - - - - - -

To keep information on each

recruiter.

****

FOREGROUND COLOR: 15
BORDER COLOR: 2
BACKGROUND COLOR: 1
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *DATABASE*

WRONG ANSWER(1): CONDOR
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 14 ROW: 08
BRANCHES:
CORRECT: SCREEN4
WRONG(1): SCREEN2
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN2

10. SCREEN NAME: SCREEN9

SECTION: 1
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

The recruiter information card was designed with field names and fields. After entering data into the field, the card becomes a _____, of which one or more form a data base.

****

FOREGROUND COLOR: 1
BORDER COLOR: 2
BACKGROUND COLOR: 6
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *RECORD*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT:
COLUMN: 05 ROW: 10
BRANCHES:
CORRECT: SCREEN10
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN8

26. SCREEN NAME: SCREEN25

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

You are to type [SS#]:, with the appropriate brackets and colon, at the position of the cursor which is displayed directly below [Name]:.

****

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: full page
COLUMNS: 40 columns
CORRECT ANSWER: *[SS#]:*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

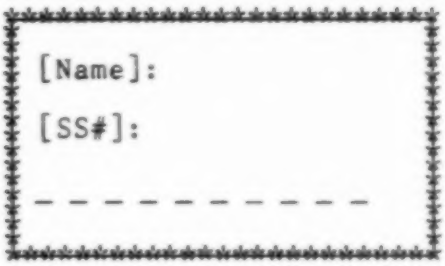
ACCEPT ANSWER AT
COLUMN: 07 ROW: 03
BRANCHES:
CORRECT: SCREEN26
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN26

28. SCREEN NAME: SCREEN27

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y



You are to type [Command]:, with the appropriate brackets and colon, at the position of the cursor which is displayed below [SS#]:.

****

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *[COMMAND]:*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 08 ROW: 05
BRANCHES:
CORRECT: SCREEN28
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN27

29. SCREEN NAME: SCREEN28

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y

You are to type [Rate]: with the appropriate brackets and colon, at the position of the cursor which is displayed directly below [Command]:.

****

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *[RATED]:*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

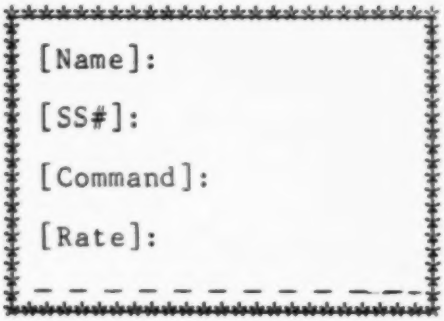
ACCEPT AT ANSWER
COLUMN: 07 ROW: 07
BRANCHES:
CORRECT:
WRONG(1): SCREEN29
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN28

30. SCREEN NAME: SCREEN29

SECTION: 2
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: fill in blank
INCLUDE IN REPORTING: Y



You are to type [Start Date]:, with the appropriate brackets, colon, and space between the words Start and Date, at the position of the cursor which is displayed directly below [Rate]:.

****

FOREGROUND COLOR: 15
BORDER COLOR: 5
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
CORRECT ANSWER: *[START DATE]:*

WRONG ANSWER(1):
WRONG ANSWER(2):
WRONG ANSWER(3):
WRONG ANSWER(4):

ACCEPT ANSWER AT
COLUMN: 08 ROW:09
BRANCHES:
CORRECT: SCREEN30
WRONG(1):
WRONG(2):
WRONG(3):
WRONG(4):

OTHERWISE: SCREEN29

56. SCREEN NAME: SCREEN55

SECTION: 8
VIDEO: N
GRAPHICS: N

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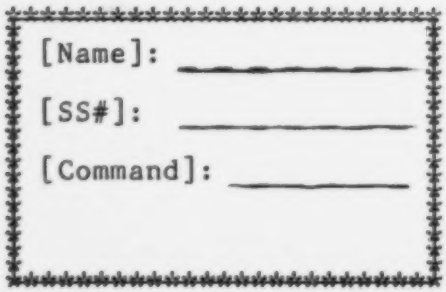
TYPE OF SCREEN: application
INCLUDE IN REPORTING: Y



1. You are to type Smith, John J at the position of the cursor which is immediately after [Name]:.

2. You are to type 123-45-6789, with the appropriate dashes (-) at the position of the cursor which is displayed immediately after [SS#]:.

3. You are to type Ft Schuyler at the position of the cursor which is displayed immediately after [Command]:.

****

FOREGROUND COLOR: 12
BORDER COLOR: 8
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
FORMAT: full page
COLUMNS: 40 columns
REDO: N

NUMBER OF TIMES TO REDO: 1

MODE: Interactive

Entry 1 Information:

COLUMN: 14
ROW: 1

SIZE OF INPUT FIELD: 13

EXECUTION ORDER: 1

TYPE OF FIELD: All characters

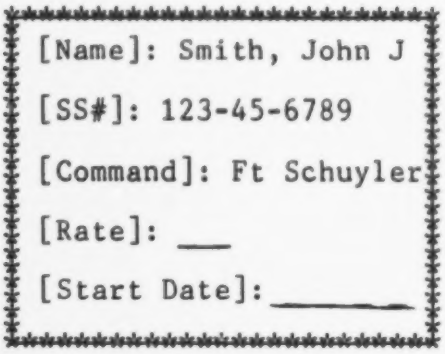
TYPE OF CHECKING: Value

ANTICIPATED ANSWER: smith, john j

SCREEN NAME: SCREEN 56

SECTION: 4
VIDEO: N
GRAPHICS: N

TYPE OF SCREEN: application
INCLUDE IN REPORTING: Y



4. You are to type DP at the position of the cursor which is displayed immediately after [Rate]:.

5. You are to type OS/22/87, with the appropriate slash (/), at the position of the cursor which is displayed immediately after [Start Date]:.

****

FOREGROUND COLOR: 15
BORDER COLOR: 8
BACKGROUND COLOR: 2
DISPLAY SPEED: by page
AUTO ADVANCE: N
FORMAT: full page
COLUMNS: 40 columns
REDO: Y

NUMBER OF TIMES TO REDO: 1

MODE: Interactive

Entry 1 Information:

COLUMN: 15
ROW: 7

SIZE OF INPUT FIELD: 2

EXECUTION ORDER: 1

TYPE OF FIELD: All characters

TYPE OF CHECKING: Value

ANTICIPATED ANSWER: DP

APPENDIX O

INSTRUCTIONAL DISK LOCATOR SHEET

THE INSTRUCTIONAL DISK THAT WAS PRODUCED IN THIS THESIS/PROJECT IS AVAILABLE AT THE OFFICE OF THE GRADUATE PROGRAM IN MASTER OF SCIENCE, IN TRAINING AND LEARNING TECHNOLOGY, NEW YORK INSTITUTE OF TECHNOLOGY,OLD WESTBURY, N.Y. 11568. THE FORMAT OF THE DISK IS 5 1/4 INCH DOUBLE SIDED/DOUBLE DENSITY.

BIBLIOGRAPHY

BOOKS

Anderson, R. H. (1983). Selecting and Developing Media for Instruction 2d ed. New York: Van Nostrand Reinhold Company.

Bharucha, K. D. (1985). DBASE II. Blue Ridge Summit, Pennsylvania: Tab Books, Inc.

Bloom, B. S. et al. (1956). Taxonomy of Educational Objectives: Cognitive Domain. New York: David McKay Company.

Briggs, L. J., & Wagner, W. (1981). Handbook of Procedures for the Design of Instruction. 2d ed. Englewood Cliffs, New Jersey: Educational Technology Publications.

Cowart, Robert (1986). The ABC's of DBASE III. 1st ed. San Francisco, California: Sybex.

Davis, R. H., Alexander, L. T., & Yelon, S. L. (1974). Learning System Design, New York, McGraw-Hill.

Dick, W., & Carey, L. M. (1985). Systematic Design of Instruction. 2nd ed. Illinois: Scott, Foreman and Company.

Gagne, R. M. (1985). The Conditions of Learning. 3d ed. New York: Holt, Rinehart and Winston.

Garner, W. L. (1966). Programmed Instruction. New York: The Center for Applied Research in Education.

Humphrey, Suzanne M. (1986). Data Base Management. 1st ed. Englewood Cliffs, New Jersey: Prentice Hall.

Katzen, Harry Jr. (1980). Computer Data Management and Data Base Technology. New York, New York: Van Nostrand Reinhold Company.

Kemp, Jerrold E. (1977). Instructional Design. 2d ed. Belmont, California: Fearon Publishers.

Kirkpatrick, D. L. (1975). Evaluating Training Programs. Wisconsin: American Society for Training and Development.

Laird, L. (1985). Approaches to Training and Development. 2d ed. Reading, Massachusetts: Addison-Wesley Publishing Company, Inc.

Mager, R. F. (1984). Preparing Instructional Objectives. Rev 2d ed. California: David S. Lake.

Markle, S. M. (1978). Designs for Instructional Designers. Champaign, Illinois: Stipes Publishing Company.

Morris, L. L., & Fitz-Gibbons, C. T. (1978). Program Evaluation Kit. Beverly Hills, California: Sage Publications, Inc.

Prague, N. C., Hammitt, E. J., Thompson, A. B. (1987). Programming with R: Base System V. Blue Ridge Summit, Pennsylvania: Tab Books, Inc.

Ross, R. G. (1978). Data Base Systems.
2d ed. New York: Amacon.

Simpson, A. (1984). Data File Programming on Your PC.
1st ed. Berkeley: Sybex

ARTICLES

Bork, A. (1978). "Machines for Computer-Assisted Learning." Educational Technology, 18(4), 17 - 20.

Dean, P. M. (1978). "Computer-Assisted Instruction Authoring Systems." Educational Technology, 18(4), 20-23.

Eisele, J. E. (1979). "Classroom Use of Microcomputers." Educational Technology, 19, 13-15.